The OIL and GAS JOURNAL

PRODUCING REFINING MARKETING

VOL. 24. NO. 46. TULSA, OKLAHOMA, APRIL 8, 1926

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Refinery Section Starts on Page 134

Deep Sand Wells Increase Production

Highest daily average estimated production week ended May 30, 1925, 2,347,984 bbls. Lowest in 1925, January 3, 1,911,730 bbls.

Large Gain Offset to Some Extent by Slump in Gulf Coast Resulting From Storm. Important California Completion

By Andrew M. Rowley

Highest daily average estimated light oil production in 1925, week ended January 17, 1,525,220 bbls. Lowest in 1925, July 18, 1,374,173 bbls.

An increase of more than 17,000 barrels in the average daily production of Oklahoma, due to the deep sand development in the Garber and Wewoka Fields, was offset to some extent by a decline of more than 14,000 barrels daily in the output of the Gulf Coast area in Texas caused by a tieup of many operations resulting from a terrific windstorm which blew down hundreds of derricks over pumping and other producing wells. The big well of the Sinclair Oil & Gas Company in the Garber Field had declined from a production of more than 25,000 barrels daily to 11,136 barrels daily during the week, owing to the encroachment of salt water. Salt water also made its appearance in the Wewoka Field, one of the most active areas in the country at this time, and which showed an increase in output during the past week of about 7,000 barrels daily.

That a deep producing zone does exist in the Inglewood Field in California was proven by the completion of the Associated Oil Company's No. 2 Vickers there which came in making 1,500 barrels of 23 gravity crude. Other large companies with holdings in that area have not as yet indicated whether they will start an active drilling campaign to develop this zone but it is estimated production of the Inglewood Field may be increased approximately 25,000 barrels a day by the middle of July.

An interesting development of the week was the drilling in Saturday of the Cane Creek well, 20 miles south of Moab, Utah. It flowed at a rate estimated at 2,000 barrels daily of 28 gravity crude. Further indications that a commercial field exists around Saginaw, Mich., were given by the performance of the Bliss Petroleum Company's well, one-fourth mile northeast of the discovery well, which pumped 25 barrels daily during the past seven days. The Sun Oil Company also got a good producer one-half mile north of the discovery well. A good showing is reported 5 miles west of Port Huron.

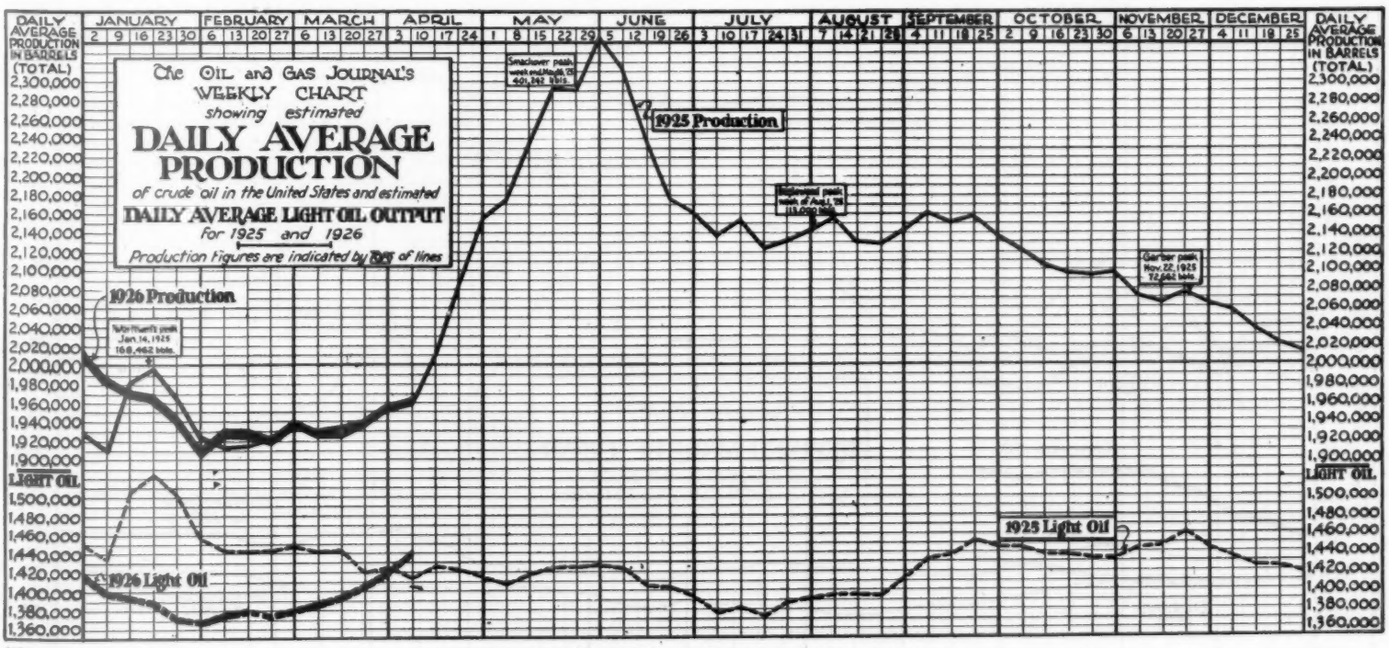
The crude petroleum situation throughout the country continues strong with heavy withdrawals from storage still reported. Poor weather conditions for motoring and the fact refiners still are manufacturing too much gasoline resulted in some weakness in the gasoline market but the advent of warm weather is expected to strengthen this situation. It is an interesting fact that during the first three months of this year there were 1,018 more wells completed in all fields east of California than there were during the same period last year.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of light and heavy gravity crude oil in the United States for week ended April 3, and a comparison with the previous week follows:

	Apr. 3		Mar. 27	
	Light	Heavy	Light	Heavy
Oklahoma—				
Tonkawa	40,080	.....	42,040	.....
Burbank	42,215	.....	43,565	.....
Other Osage Fields	32,810	.....	33,040	.....
Cushing and Shamrock	22,045	.....	22,310	.....
Bristow and Eastern Bristow	30,435	.....	30,970	.....
Cromwell	18,290	.....	18,630	.....
Papoose	12,765	.....	12,945	.....
Garber	47,520	.....	30,145	.....
Blackwell-Braman	17,120	.....	17,440	.....
Davenport	19,540	.....	20,740	.....
Wewoka	29,945	.....	22,710	.....
Northern Miscellaneous	99,210	.....	99,745	.....
Southern Fields	67,115	.....	67,735	.....
Total Oklahoma	479,090	.....	462,015	.....
North Louisiana	49,125	.....	48,335	.....
Arkansas—				
El Dorado and Calion	9,605	.....	7,605	.....
Smackover Light	18,155	.....	17,635	.....
Smackover Heavy	.....	134,345	.....	134,560
Miscellaneous	7,635	.....	8,245	.....
Total Arkansas	35,395	134,345	33,485	134,560
North Central Texas	176,615	.....	171,300	.....
Powell	31,410	.....	31,700	.....
Mexia, Currie, Richland, etc.	15,830	.....	15,810	.....
Wortham	10,900	.....	10,800	.....
Kansas	101,230	.....	103,320	.....
Total Mid-Continent Area	899,595	134,345	876,765	134,560
Gulf Coast	.....	86,045	.....	100,165
Southwest Texas	.....	38,825	.....	39,000
Eastern	98,100	.....	98,100	.....
Rocky Mountain Area	104,890	.....	105,705	.....
California—				
Santa Fe Springs	49,500	.....	49,500	.....
Long Beach	111,000	.....	111,500	.....
Huntington Beach	44,000	.....	44,500	.....
Torrance	5,000	23,000	5,000	23,000
Dominguez	20,500	.....	20,500	.....
Rosecrans	20,500	.....	20,500	.....
Inglewood	29,000	22,000	28,500	22,000
Remainder of State	60,000	219,000	60,000	220,000
Total California	339,500	264,000	340,000	265,000
Total United States	1,442,085	523,215	1,420,570	538,725
Grand Total		1,965,300		1,959,295

Total Increase, 6,005 Bbls.; Light Oil Increase, 21,515 Bbls.



WHAT AND WHERE TO BUY—PAGES 173-174-175

Rapid Advance in Oklahoma Fuel Oil

All Grades 5 to 10 Cents Higher. Kerosenes Stronger. Gasolines Weaker With Little Export or Domestic Buying

By C. O. Willson

Strength in fuel oils and weakness in motor fuels were the outstanding developments of the past week in the Oklahoma (Group 3) market.

The upward trend applied not only to the products sold as fuel oil but also gas oils and distillates. All grades of fuel oil advanced from 5 to 10 cents with ⅛ to ¼-cent increases in the gas oil and distillates. Kerosenes, which have given some indications of price recessions recently, also stiffened the first part of the week and refiners who announced any changes generally asked higher prices.

The slump in most grades of gasolines including natural gasolines, amounted to ⅛ to ¼ cent. There was practically no new export buying either in Oklahoma or North Texas and this fact, coupled with a dull domestic market, brought the usual price concessions the first of this week.

Reports in regard to weather conditions in the middle western states were not encouraging and no improvement in the domestic demand is anticipated before next week. It was expected that the lower prices which the refiners were quoting would attract some of the export buyers but up to Tuesday important buying or inquiries had developed.

Bureau of Mines Report

From the standpoint of the probable future market the most interesting development of the week was the release of the February report of the Bureau of Mines covering refinery operations. In the accompanying table the report for the Mid-Continent Field is summarized along with similar data for the same month of last year.

It is apparent that this report very clearly explains the market situation existing in the Mid-Continent Field at this time It has been pointed out many times during the past two months that Mid-Continent refiners were not running as much crude to their stills as they were a year ago at this time. This fact, it is usually stated, means that the Mid-Continent refining industry is in a much better situation in regard to supply and demand than gasoline prices indicate.

Greater Gasoline Recovery

The accompanying table reflects the one factor in the comparative situation which is often overlooked by market students. The table shows that while crude runs to stills in the Mid-Continent are less than they were a year ago the gasoline output is greater. Although Mid-Continent refiners were running 15,000 bbls. less crude daily to their stills in February than in the same month last year, the gasoline produced was approximately 4,500,000 gallons greater. Expressed in another way the gasoline recovery from crude increased from 41.2 per cent in February of last year to 43.8 per cent in February of this year.

This situation is not confined to the Mid-Continent but is general throughout the United States. It accounts for a substantial part of the 110,000,000 gallons of gasoline which were added to stocks during February. These stocks, to which additions are still being made, constitute the greatest menace threatening the market structure of the entire industry at this time.

In Oklahoma and Kansas, according to the Government's report, each barrel of crude run to stills means more than 21 gallons or 50.5 per cent gasoline. Last year in February the percentage of gasoline recovery was 46.3. This is due to more efficient plant operations. More cracking units are being installed and percentage of gasoline recovery will no doubt continue to increase throughout the year. The only check on this situation would be a still greater shift in the price situation in which refiners would not find it profitable to secure the maximum recovery of gasoline in their operations.

Aids Other Products

The manufacturing situation responsible for the large output and low prices for gasolines is also largely responsible

(Continued on Page 150)

REFINED MARKET BAROMETER

Advances in eastern gasoline tank wagon schedules during the past week were not supported by developments in refinery tank car prices. Latter quotations were generally lower, especially in the Mid-Continent and middle western areas where both the domestic and export demand was slow. Weather conditions generally have not been favorable for an increase in domestic consumption. Fuel oils, gas oil and distillates were much in demand in the Mid-Continent and prices on all grades were advanced. Kerosene continued firm in most areas with slightly higher prices prevailing at interior points. Wax and lubricating oils were generally reported dull.

Mid-Continent—Sensational advance in all grades of fuel oil reported from all refining sections. Gas oils and distillates also strong. Kerosene prices higher. Refinery and natural gasolines weak with lower prices. No change in other products.

Atlantic Seaboard—One cent advance in tank wagon prices believed to reflect improved gasoline market situation. Kerosene firm. Fuel and gas oil strong. Lub oils unsettled. Fair movement of wax.

California—Market steady. No price changes.

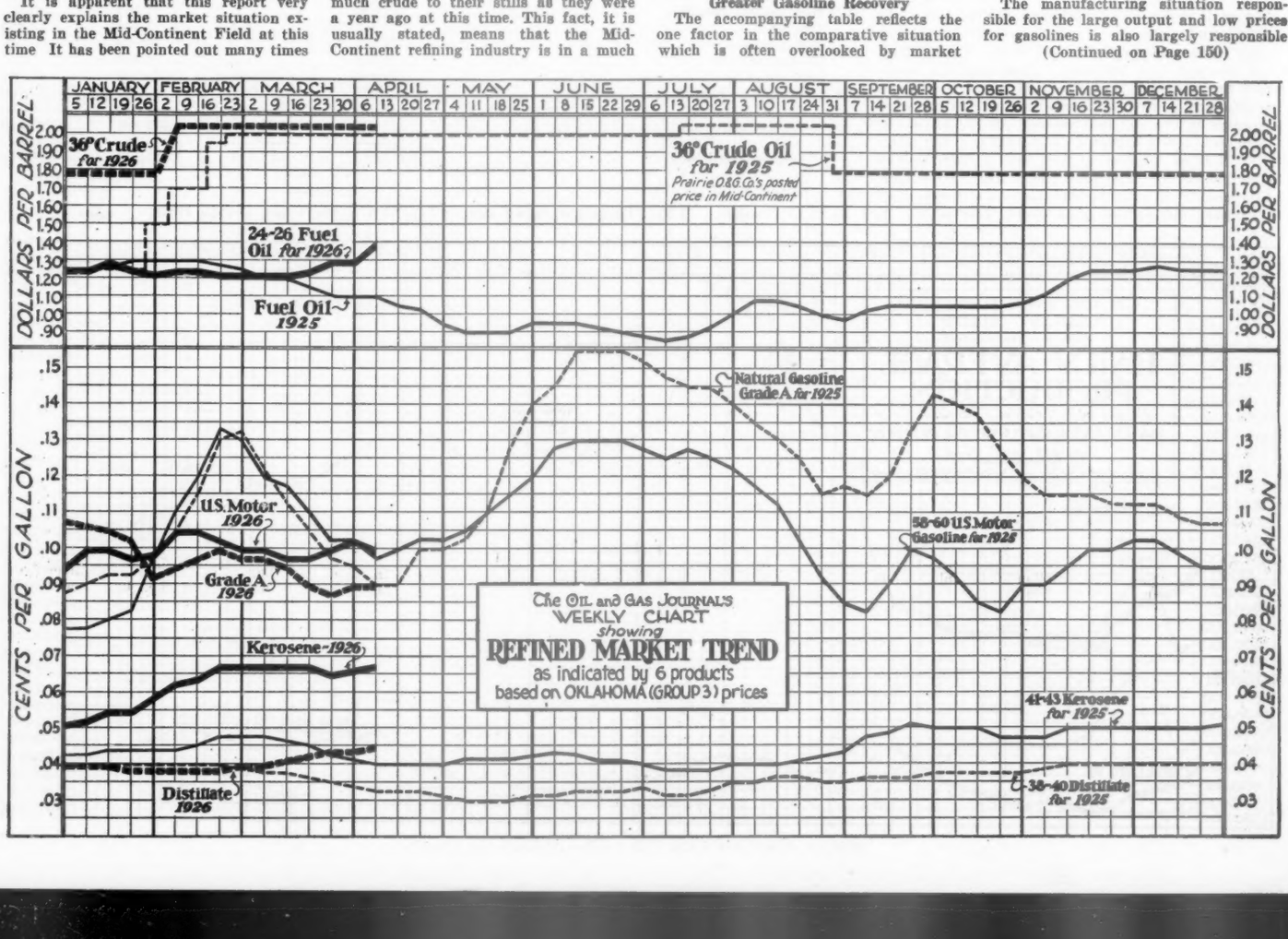
Pennsylvania—Cold weather responsible for sluggish gasoline market. Kerosene strong. Wax weaker. Fair movement of lub oils.

Chicago—Cold weather holds back gasoline demand. Kerosene firm. Fuel oil strong. Gas oil active.

*MID-CONTINENT REFINERY OPERATIONS

Area—	Daily Crude Throughput	Gasoline Produced	Gasoline Stocks	Kerosene Stocks	Fuel-Gas-Oil Stocks
		February, 1926			
Oklahoma	245,821	145,914,000	166,777,000	15,304,000	145,875,000
North and Central Texas	90,750	41,268,000	24,474,000	8,668,000	42,509,000
North Louisiana-Arkansas	50,464	12,311,000	5,085,000	490,000	37,544,000
Total	387,035	199,493,000	196,336,000	24,462,000	225,928,000
		February, 1925			
Oklahoma	260,180	141,918,000	158,608,000	22,166,716	113,539,151
North and Central Texas	105,420	43,548,045	21,307,548	16,816,688	58,512,822
North Louisiana-Arkansas	36,946	9,582,393	5,570,181	796,358	21,367,196
Total	402,546	195,048,901	185,486,509	49,779,952	193,419,179

*Crude throughput is given barrels per day. Gasoline production is given in gallons for entire month. Stocks are given in gallons on last day of month.


JANUARY FEBRUARY MARCH APRIL MAY JUNE JULY AUGUST SEPTEMBER OCTOBER NOVEMBER DECEMBER
DOLLARS PER BARREL
CENTS PER GALLON
36° Crude for 1926
24-26 Fuel Oil for 1926
Fuel Oil 1925
36° Crude Oil for 1925
Prairie O&G Co's posted price in Mid-Continent
Natural Gasoline Grade A for 1925
U.S. Motor 1926
Grade A 1926
Kerosene-1926
Distillate 1926
58-60 U.S. Motor Gasoline for 1925
41-43 Kerosene for 1925
38-40 Distillate for 1925
The Oil and Gas Journal's WEEKLY CHART showing REFINED MARKET TREND as indicated by 6 products based on OKLAHOMA (GROUP 3) prices

Motor Fuel End Point Specifications

Many Refiners Asking Relief By Cancellation and Are Supported By Experts of the Advisory Board

By C. K. Francis
Technical Editor

Gasoline has been defined as light liquid obtained from the distillation of petroleum, which is used by many states as a source of revenue. It is a popular product to tax, because the public often tanks up on it. The American Society for Testing Materials says that it is "a refined petroleum naphtha which by its composition is suitable for use as a carburant in internal combustion engines." From the same authority we learn that petroleum naphtha is "a generic term applied to refined or unrefined petroleum products and liquid products of natural gas, not less than 10 per cent of which distills below 347 Farenheit and not less than 95 per cent of which distills below 464 Farenheit when subjected to distillation in accordance with the current method of test of the American Society for Testing Materials for petroleum products of this nature."

As these definitions suggest, methods for testing and specifications are involved in any attempt to arrive at a proper classification of gasoline. The American Society for Testing Materials is the authority for the details of the distillation test and other methods for determining the purity of gasoline. These methods have been accepted by the petroleum industry. The specifications which have been adopted by the Federal Specifications Board and published by the Government, have been extensively followed throughout the United States by inspecting and purchasing agencies. The standardization of testing methods and the fixation of properties have a broad and quite definite influence on both quality and quantity of the gasoline available.

Once Graded by Gravity

The bulk of the gasoline marketed today is used as a carburant, but just what constitutes a suitable carburant has not been said. The president of the American Chemical Society reports that the "carburetors are throwing gas away at the rate of millions of dollars a year." That carburetors do waste gasoline may be substantiated by every car driver, who will mention at least one. The point may be made that the perfect carburetor has not been invented, and yet it cannot be denied that the internal combustion engine was brought to such a high stage of perfection some 20 years ago with the gasoline of that day that it was possible to establish the great automobile industry. At that time the only method for grading gasoline was by means of gravity, and for many years it continued to be thought an index of volatility. Particular stress was placed upon the volatile character of gasoline, as measured by the distilling range, during the war. This was a period of universal and efficient inspection, and it was soon found that the reports of the quality of gasoline shipments did not check at destination with those made at the point of origin. A careful survey of the problem disclosed the fact that the apparatus varied and that there was no fixed form of procedure. These facts stimulated investigations which have resulted in the present A. S. T. M. apparatus and method for making the distillation test. The specifications for gasoline are not in so satisfactory condition.

Studies of the behavior of gasolines in the automobile motor have demonstrated the fact that gravity cannot be relied upon as a correlated property with volatility and it is no longer included in the Government specifications for motor gasoline.

Three Sources of Gasoline

The present gasoline supply is derived from three sources—by fractionating petroleum through direct distillation; cracking certain petroleum fractions, usually by means of heat, pressure and distillation; and extraction from natural gas or petroleum vapors by compression, absorbing mediums and refrigeration. The invention of the internal combustion engine and its successful use in the automobile brought about such a sudden great demand for this motor fuel that the primary distillation of petroleum could not be depended upon to satisfy the increasing requirement. This condition created a favorable opportunity for the installation of what are now commonly called cracking plants or pressure stills, also extracting units or natural gasoline plants. Through the operation of pressure stills it is now possible to more than double the quantity of gasoline obtained by the direct distillation or topping of crude oil.

During the year 1910 the refineries of this country produced 663,000,000 gallons of gasoline. The output of motor fuel in 1925 was, according to the Bureau of Mines, 11,239,900,000 gallons. The volume of gasoline obtained from natural gas 15 years ago was negligible, but the natural gasoline plants of the United States placed over 1,104,900,000 gallons on the market during the year 1925.

The major portion of this gasoline, regardless of the source, is consumed as a motor fuel. In fact many of the better grades of motor gasoline are blends of direct gasoline, cracked gasoline and natural gasoline. These facts must be considered when adopting specifications.

Color Not So Important

The most apparent property of gasoline is that of color and many purchasers at the filling station demand, without any good reason, that the liquid must be crystal clear in color. The very nature of the process employed in the refineries prevents contamination with the very heavy portion of the crude which in some districts may contain objectionable asphaltic substances with strong coloring properties. The natural gasolines are normally free from color. The product from the cracking units may be slightly tinted with a yellow cast but this, contrary to being objectionable, is now indicative of superior qualities. The Federal Specifications Board has indicated that the color is of so little importance that they formerly made a liberal requirement of No. 16 Saybolt, and last month announced that the new specifications, soon to be published, would contain no color requirement for motor gasoline. Color has so little to do with the real value that it should be ignored.

MAY BE CONSIDERED FURTHER BY SPECIFICATIONS BOARD

Some months ago the Advisory Board, consisting of technical experts, to the Technical Committee on Lubricants and Liquid Fuels of the Federal Specifications Board, recommended to the Board that the stipulation for end point be omitted from the specification for motor gasoline. The Technical Committee tentatively accepted the recommendation. However, after consideration, it has been announced:

"At a meeting of the Technical Committee on February 24, 1926, the following motion was carried:

"That the committee reconsider the gasoline specification and allow the specification to remain in the present form with respect to the end point; and that the Advisory Board be notified of this action by the committee."

This decision is of great economic importance to the petroleum industry. Undoubtedly the question of end point in the particular relation it occupies in the construction of motor gasoline will have further consideration at the next public meeting of the Federal Specifications Board.

The low initial boiling point is a desirable property for gasoline because it insures easy starting of the motor. This part of gasoline is often obtained from natural gasoline. However, should there be no rise in the boiling point, as the distillation proceeds, the liquid would be too volatile for motor cars and the quantity required would be large on account of the exceedingly rapid rate of vaporization. A good body or staying quality is derived from the heavier constituents, which originate in the direct and the cracked portions, and is indicated on a distillation curve by the uniform rise after the first 20 per cent fraction has distilled. An exceedingly rapid rise in a curve would suggest the presence of a large quantity of heavy oils, and would throw the distilling range outside of the specifications.

Distillation Range

The current specification of the Federal Specifications Board for distillation range of motor gasoline is:

	Farh.
Initial boiling point	131
Recover 20 per cent at	221
Recover 50 per cent at	284
Recover 90 per cent at	392
End point	437
Total recovery—95 per cent.	

When a similar specification was first prepared it was probably the purpose of the board to suggest a proper rate of rise or vaporization by means of the intermediate requirements at the 20, 50 and 90 per cent points. It has been found that the normal fractionation of petroleum did not produce a gasoline which would conform at the 90 per cent point and the end point. That is, the end point had to be lower than 437 when 90 per cent was recovered at 356, which was the specification published a few years ago. This was changed to 374 and more recently to 392. In many refineries the end point ran from 20 to 30 degrees low when meeting the quantity required at 356 and 372. It was quite generally recognized that the 90 per cent specification was so stringent that an end point of 437 was too high and therefore a superfluous detail. Indeed some inspectors, in order to save time, do not carry the distillation test beyond the 90 per cent point when it is found to be satisfactory; knowing from experience that the end point will be well within the specified temperature of 437 Fahrenheit.

Refiners Asking Relief

Many refiners have asked relief from the Federal Specification Board by the cancellation of the end point specification. This request has received the support of many experts, including the advisory board. The advisory board has been constituted to assist the Federal Specifications Board and consists of representatives from the following engineering and technical societies—American Society for Testing Materials, National Petroleum Marketers Association, Society of Automotive Engineers, Western Petroleum Refiners Association, National Petroleum Association, American Petroleum Institute, American Society of Mechanical Engineers, American Railway Association. It is unfortunate that, nothwithstanding the request from those who are familiar with the difficulties of manufacture, together with a full appreciation of the consequent reduction in output, and also the advice of the technical experts, who have a knowledge of the actual functioning of the specification among the consumers, that the Federal Board has recently declined, after tentatively accepting, to adopt the recommendation to omit the end point of 437 when demanding that there shall be a 90 per cent recovery at 392 Fahrenheit. The big subject of conservation is involved.

There is no questioning the fact that the quality of the gasoline is constantly improving. During the past six years the Bureau of Mines has conducted semi-annual surveys of gasoline marketed in the United States. The survey recently completed again confirmed the tendency toward uniformity in quality which has been noted in the past several years, and the tests of the samples collected in the various cities indicated an average increase in the volatility. Increased volatility is a form of stating or indicating lower end point. Certainly, as has been suggested, the end point must be within the specification when the quantity distilling at 90 per cent is satisfactory.

Removing the Cotton

When it was proposed to revise the distillation test by removing the cotton from the bulb of the thermometer, it was predicted that this would require the refiner to supply a gasoline having a lower end point if there were no compensating allowance. It was shown that there was a difference of four or more degrees, therefore an uncovered bulb determination of 437 corresponds to at least 433 with cotton. The recent report of the Bureau of Mines appears to confirm the prediction. Investigations have indicated that this innocent looking alternation in the method means a difference of 1½ to 2 per cent in the quantity of gasoline produced. Twice that quantity must be involved in the 90 per cent and the end point spread of the current specification. Let it be equal; then there appears a loss of 3 per cent in this product to the industry and of course to the gasoline consumer. Based on the motor gasoline production for 1925 this is equivalent to 337,197,000 gallons, or at 10 cents a gallon to $33,719,700. Certainly a quantity and a sum worth thinking about. Some authorities calculate that the petroleum supply will soon be exhausted. They advise that waste be prevented and all known means of conservation should be adopted. Unquestionably, the furnishing of over 300,000,000 gallons of gasoline to the public is of interest. Should Europe suddenly get on her feet and ask for bids on any such quantity, the entire industry would be shocked into a celebration.

Under the existing specification for a total recovery of 95 per cent, and the 90 per cent essential the end point becomes of minor importance. Properly refined gasoline may have a much higher end point than 437 Fahrenheit, and yet be an excellent motor fuel. Other methods than the distillation test are used to determine the degree of purity and they might be considered of more practical value. The tests for sulphur and corrosion as prescribed by the Government should cause the rejection of objectionable heavy ends.

Trial of Conservation of Gas Pressure

Experiment By Indian Territory Illuminating Oil Co. in Virgin Field in Northern Seminole County, Oklahoma

By C. D. Lockwood

The restoration of pressure to oil sands in the hope of increasing recovery of crude is one of the foremost important problems in the Mid-Continent today, and tests are under way now in Oklahoma which will probably result in the expenditure of hundreds of thousands of dollars if the experiments prove artificial pressure to be effective and practical. At the same time, certain engineers and others interested in conservation are insisting that much of the money now being used or contemplated to expend in the installation of pressure apparatus could have been saved through careful and scientific production methods, thereby conserving the gas which is already in the sand.

Some so-called "practical" oil men have opposed any attempt to control the amount of gas which is produced along with the oil in a new pool, not only on the ground that they are entitled to get all of the oil they can get while the getting is good, but because any interference with the normal or abnormal flow of the well is likely to ruin it as a producer. Consequently the history of many pools in Oklahoma has been one of rapid depletion of the natural pressure and quick exhaustion of the gas, accompanied or followed by speedy end to flowing wells and necessitating expensive equipment to put them on the pump.

Such methods, whether justified because of practical problems and difficulties or not, have brought forth charges of "criminal waste" and other unpleasant accusations of the oil industry as have been heard during the past year or two.

In Virgin Territory.

One of the most interesting experiments, therefore, that could be made in Oklahoma is being carried on in the new pool opened about the first of March by the Indian Territory Illuminating Oil Co., in Section 24-9-6, northern Seminole County. Here is a company owning the first well in a virgin territory, having the jump on all competitors by nearly two months in the important matter of getting its share of oil out of the ground, and yet, instead of opening up the well to its full capacity and making every effort to extract the largest possible volume of crude before tests on adjoining property have time to tap the reservoir, the Indian Territory Illuminating Oil Co. is gradually choking the well down in an effort to reduce the gas volume as low as possible per barrel of oil. So far, the attempt has met with success and the results have been very gratifying as the oil output has steadily increased. The well averaged 1,092 bbls. daily during the week ended Saturday, April 3, while its initial production from the present total depth of 4,012 feet was 1,086 bbls. on March 12. The first oil was encountered on February 28 at 3,980 feet in sand topped at 3,968 feet. On March 3, it swabbed 96 bbls. from this depth and on the sixth was deepened to 4,005 feet, where it swabbed and flowed 200 bbls. The next day it was deepened to 4,009 feet, resulting in a yield of 715 bbls. and on March 11 another foot was added to the total depth. This brought the production up to 800 bbls., and the following day, March 12, the present total depth of 4,012 feet was reached, the well flowing 1,086 bbls.

Gas Easily Measured.

At that time it was flowing through a 6-inch pipe and was making 30 flows daily with regularity and precision. The flows lasted 12 minutes and at their peak the gas volume amounted to about 6,000,000 feet. The well was connected up to a gas trap and the volume of gas was therefore easily measured. Thus, it was found that the 6,000,000-foot volume which accompanied the peak of the flow lasted about 2 minutes, and for approximately 8 minutes the gas flowed at the rate of about 4,000,000 feet. The average gas volume is about 1,100,000 feet, so that the amount of gas per barrel of oil is only a little more than 1,000 feet.

The size of the opening through which the oil was flowing was reduced from 6 inches to 5 inches without affecting the quantity of crude output so the next step was a reduction to 4 inches. This, too, had no detrimental effect on the flow but on the other hand lengthened the duration of the flow period from 12 minutes to 15 minutes. It is the intention of the company to keep on reducing the size of the bean as long as the reduction does not show signs of injuring the well, and probably before this article is printed the oil will be flowing through a 3½-inch opening. It is confidently expected that this practice will result not only in conserving the gas pressure, thereby increasing the ultimate recovery before flowing ceases, but will also help to hold back the water which probably underlies the oil.

The formation from which this well is producing is believed to be the Hunton Lime although it has not yet been definitely correlated. The flow tank was to have been cleaned out Tuesday or Wednesday of this week in an effort to obtain samples from the bottom of the hole and if any samples can be obtained they will probably establish the correlation. If the horizon is the Hunton Lime, and it is believed to be at least that deep stratigraphically, the well appears to be high and the majority of geologists are expecting to see a pool of considerable size develop around it. Of course, the country is tricky and several areas could be named where thousands of dollars have been spent in vain after one good well came in. Chief among these might be mentioned Holdenville in Hughes County and the Rhoda Ford district of Lincoln County.

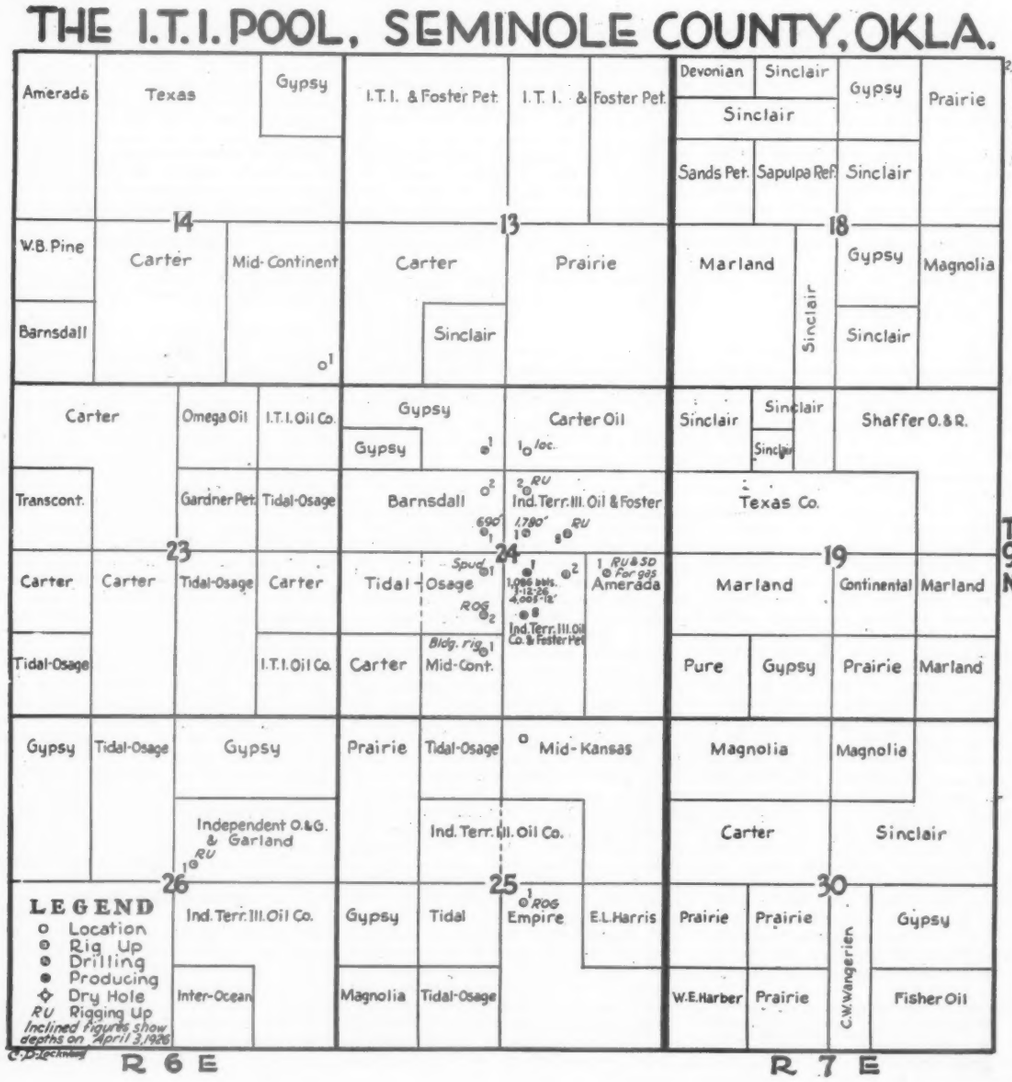
Bright Prospects for Pool.

If the producing formation in the Indian Territory Illuminating Oil Co.'s No. 1 James proves to be the Wilcox Sand it is literally "as high as a cat's back," and the pool's prospects appear even brighter. On the other hand, if this oil is coming from the Hunton, the Wilcox still remains untouched below it and the mark is a juicy one to shoot at.

To indulge in a little speculation anent the subject of gas conservation, if this No. 1 James should eventually become the center of a prosperous pool, it has every chance of establishing a record as the scene of Oklahoma's first attempt to control on a reasonably large scale the output of gas and the waste of natural energy. The I. T. I. Oil Co. having led the way, other operators in the pool should follow and at least show a wholehearted willingness to cooperate in this important matter. There may be and undoubtedly will be important mechanical and physical difficulties to face before the problem can be solved. But the same thing has been accomplished in other parts of the country and there is no real reason why it should not be feasible in the Mid-Continent. In California, for instance, the operators agree on the size of bean and even though some of them "fudge" a little now and then by using an old fitting after the opening has been cut considerably larger by sand, much good is accomplished.

The chief geologist of one of the large Tulsa companies told the writer the other day that he is convinced some of his com-

(Continued on Page 149)



Little Change in Refinery Operations

Mid-Continent Crude Runs to Stills April 1 Practically the Same as March 1. Oklahoma Throughput Greater

By C. O. Willson

Based on their operations the first of the month Mid-Continent refiners will run practically the same amount of crude to their stills in April that they did in March. Crude runs to stills on March 1 based on the monthly refinery review of The Oil and Gas Journal totaled 365,990 bbls. daily and on the first day of the new month the runs were 368,210 bbls. daily, an increase of 2,220 bbls.

Reports recently that refiners had again reduced their operations due to the low gasoline prices were not substantiated by the April report when the e tire area is considered. Several refiners curtailed their operations and there were two less plants operating than in March but other refiners increased their crude throughput resulting in the slight increase in total crude runs.

Of the five areas constituting the Mid-Continent, Kansas and Arkansas were the only refinery groups to show decreases. Kansas plants reduced their crude throughput 7,520 bbls. daily and Arkansas 2,715 bbls. Oklahoma showed the largest increase in its crude runs to stills with a total throughput of 162,430 bbls.

MID-CONTINENT REFINERY OPERATIONS

Table No. 1

(Based on Plants April 1, 1926, and March 1, 1926)

	*No. Plants Apr. 1	Capacity	†Plants Opr't'g April 1	Daily Runs April 1	Plants Opr't'g March 1	Daily Runs March 1	Daily Increase April 1
Oklahoma	58	174,200	46	162,430	44	153,150	9,280
North Central Texas	46	177,100	30	81,150	32	80,075	1,075
†Kansas	23	130,900	17	72,675	18	80,195	‡7,520
North Louisiana	6	37,500	5	33,500	6	31,400	2,100
Arkansas	9	30,000	9	18,455	9	21,170	‡2,715
Total	142	549,700	107	368,210	109	365,990	2,220

*Does not include plants which have been shut down one year or longer. †Includes one Missouri plant. ‡Decrease.

Table No. 2

(Based on Plants April 1, 1926, and April 1, 1925)

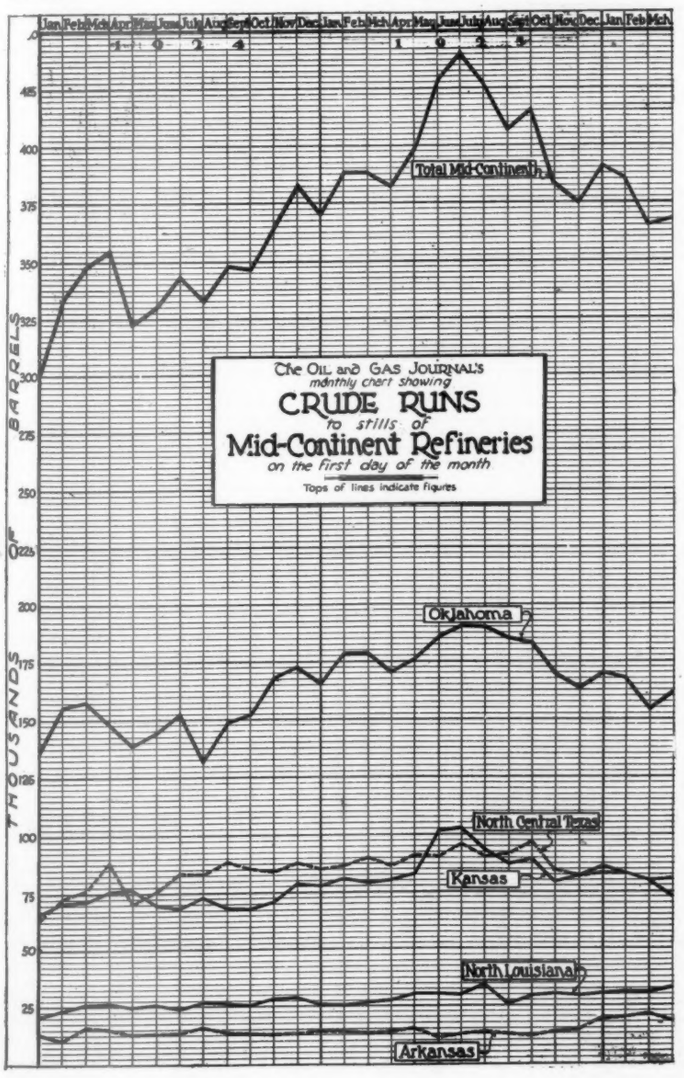
	*No. Plants April 1, 1925	Capacity April 1,1925	Plants Opr't'g April 1,1925	Daily Runs April 1,1925	Daily Decrease April 1, 1926
Oklahoma	59	268,600	52	170,550	8,120
North Central Texas	44	165,750	38	87,170	6,020
†Kansas	24	119,000	20	80,375	7,700
North Louisiana	7	39,300	6	27,600	‡5,900
Arkansas	17	36,700	10	17,180	‡1,275
Total	148	629,350	126	382,875	14,665

*Does not include plants which have been shut down one year or longer. †Includes three Missouri plants.

As showin in Table 2 crude runs to stil's on April 1 were 14,665 bbls. less than on the same date last year. March operations were alsc less than in March of last year.

Several situations are responsible for the fact that Mid-Continent refiners, considered as a unit, are making practically no changes in their plant operations. In the first place, as shown in the accompanying diagram reductions have already been made. Crude runs to stills are now 72,140 bbls. less than on July 1, the peak period in the history of the field. Refiners are loathe to drop any more crude connections, knowing that it is usually impossible to again secure connections with producing properties after they have been dropped to one of their competitors.

The refining industry naturally believes that better gasoline prices will prevail just as soon as the spring and summer demand is under way when they will need more crude than they are now buying. Another factor in the present situation lies in the fact that the refined market with the exception of gasoline is generally saisfactory. Fuel oil, including gas oil and distillates, advanced in March and kerosene prices continue higher than during any period in several years. This situation has made it possible for many refiners to continue their operations with little if any curtailment.


Jan. Feb. Mch. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mch. Apr. May June July Aug. Sept. Oct. Nov. Dec. Jan. Feb. Mch.
1926
1925
THOUSANDS OF BARRELS
Total Mid-Continent
Oklahoma
North Central Texas
Kansas
North Louisiana
Arkansas
The Oil and Gas Journal's monthly chart showing
CRUDE RUNS
to stills of
Mid-Continent Refineries
on the first day of the month
Tops of lines indicate figures

Oklahoma

In Oklahoma the Barnsdall Refineries, Inc., which was rerunning at its Okmulgee refinery is now operating again on a 4,000-bbl. basis. The Gilmer Refining Co. has resumed operations at its Gilmer plant. The Drumright refinery of the Tidal Refining Co. after a shut-down while improvements were being made, is now running 7,000 bbls. daily to stills. Other refiners who have increased their runs include the Champlin Refining Co. and Cushing Refining & Gasoline Co. The largest reduction in the state was that of the Marland Refining Co., which reduced iis runs from 19,500 bbls. to 16,000 bbls.

North Central Texas

In north and central Texas the Dale Oil & Refining Co. has shut down its Electra refinery due to a disastrous fire. Operations will probably be resumed some time during the month. Other plants which are operating in March and are now shut down include the Primrose Refining Co., at Wichita Falls, and the Star Refining Co., at Fort Worth. The Burkburnett refinery of the Tidal Western Refining Co. which was shut down on March 1 has resumed operations at 2,500 bbls. daily.

Kansas

At Arkansas City the Arkansas City Refining Co. is operating again after a shut down of several weeks. The Wichita plant of the Barnsdall Refineries, Inc., was rerunning the first of the month. Substantial curtailments in operations were made at the Russell refinery of the West Kansas Refining Co. and the Arkansas City refinery of the Roxana Petroleum Corp.

North Louisiana and Arkansas

There were no changes of importance in North Louisiana operations. The total runs were slightly greater due to the increases at the plants of the Louisiana Oil Corp. Three plants in Arkansas reduced their runs accounting for a total reduction of 2,715 bbls.

REFINING OPERATIONS IN OKLAHOMA

(Plants which have been in operation during the past year.)

Name and location—	Daily Capacity	Runs April 1	Runs March 1
Anderson-Pritchard, Cyril	1,200	1,500	1,100
Barnsdall Refineries, Inc., Barnsdall	5,000	3,800	3,800
Barnsdall Refineries, Inc. (Waite Phillips), Okmulgee	6,000	4,000	Rerun
Bell Oil & Gas Co., Grandfield	3,000	1,200	1,200
Bolene Refining Co., Enid	5,000	3,000	3,000
Cameron Refining Co., Ardmore	3,900	3,100	3,000
Canfield Refining Co., Yale	500	150	150
Champlin Refining Co., Enid	16,000	7,500	6,200
Coleman-Nelson Corp., West Tulsa	2,000	Shut down	Shut down
Continental Oil Co., Sapulpa	7,000	1,500	1,500
Cushing Refining & Gasoline Co., Blackwell	1,500	1,200	1,200
Cushing Refining & Gasoine Co., Cushing	2,500	1,500	1,000
Empire Refineries, Inc., Cushing	7,000	5,000	5,000
Empire Refineries, Inc., Okmulgee	3,000	3,000	3,000
Empire Refineries, Inc., Ponca City	6,500	6,000	6,000
Fairmount Refining Co., Fairmount	2,500	Shut down	Shut down
Garber Refining Co. (Omar)	3,000	1,700	1,300
Gilmer Oil Co., Ringling	1,100	730	Shut down
Globe Oil & Refining Co., Blackwell	5,000	4,500	4,500
Hewitt Refining Co., Hewitt	1,800	750	750
Illinois Oil Co., Cushing	3,000	400	1,300
Imperial Refining Co., Ardmore	6,000	4,550	3,600
Independent Oil & Gas Co. (Allied), Okmulgee	1,800	1,000	1,200
Interocean Refining Co. (Lorraine), Bristow	4,000	1,000	1,000
Lawton Refining Co., Lawton	1,000	Shut down	Shut down
Johnson Oil Refining Co., Cleveland	5,000	4,700	4,500
Marland Refining Co., Ponca City	25,000	16,000	19,500
Mid-Continent Petroleum Co. (Cosden), West Tulsa	35,000	26,000	26,000
*Miller Brothers 101 Ranch, Marland	100	50	100
Newkirk Oil & Refining Co., Newkirk	2,000	Shut down	Shut down
Nyanza Refining Co., Wilson	3,500	Shut down	Shut down
Oil State Refining Co., Enid	2,000	Shut down	Shut down
Okla.-Tex. Refining Co. (Sagamore), Grandfield	2,000	Shut down	Shut down
Peppers Gasoline Co., Covington	1,000	750	750
Pierce Oil Corp., Sand Springs	10,000	6,500	6,000
Pontotoc Pipe Line & Refining Co., Allen	1,500	100	100
Producers & Refiners Corp., West Tulsa	7,000	4,000	4,000
Producers & Refiners Corp., Blackwell	4,000	Shut down	Shut down
Pure Oil Co., Ardmore	6,500	2,000	2,000
Pure Oil Co., Cushing	5,000	Shut down	Shut down
Pure Oil Co., Muskogee (O. P. & R. Co.)	2,500	2,000	2,000
Red Seal Refining Co., Oklahoma City	2,500	Shut down	Shut down
Riley Petroleum Co., Bristow	800	500	500
Rock Island Refining & Pipe Line Co., Duncan	2,500	2,250	2,500
Roland Oil Co., Bristow	1,500	900	550
Sayre Oil & Refining Co., Sayre	500	100	100
Shaffer Oil & Refining Co., Cushing	10,000	10,000	10,000
Sun Oil Co., Yale	3,000	2,500	2,500
Sinclair Refining Co., Cushing	6,000	Shut down	Shut down
Sinclair Refining Co., Muskogee	1,000	1,000	1,000
The Texas Company, West Tulsa	10,000	10,000	10,000
Texas Pacific Coal & Oil Co., Wynnewood	2,500	1,600	2,000

(Continued on Page 150)

Cracking Vital in Rocky Mountain

More Than 40 Per Cent of Gasoline Production Obtained From Cracking. Big Companies Solve Difficult Problems

By Charles E. Bowles
Petroleum Analyst, The Oil and Gas Journal

In the production of gasoline by cracking the Rocky Mountain area and the Texas Gulf Coast easily led all of the other refining areas, each producing over 40 per cent of its total gasoline output from its cracking stills.

In 1925, in the Rocky Mountain area, the total output of refinery gasoline was over 611,000,000 gallons. Of this amount about 313,000,000 gallons, or 51 per cent, was straight run gasoline—over 263,000,000 gallons, or 43 per cent came from cracking stills—and about 35,000,000 gallons, or 6 per cent, from natural gasoline.

Reduced to a daily basis this area's gasoline output for 1925 would be as follows:

	Gallons Per Day
Straight run	858,000
Cracked	722,000
Natural gasoline	95,000
Total	1,675,000

Capacity of Plants

On June 15, 1925, according to the United States Bureau of Mines, there were 396 cracking units in this area with a total charging capacity of 97,190 bbls. a day, of which 95,390 bbls. of rated capacity was in operation. The estimated gasoline-making capacity of these cracking stills was 28,880 bbls. of gasoline a day—and as, during 1925, an average of about 17,200 bbls. a day of cracked gasoline was made it would appear that the cracking stills had operated during 1925 at an average of about 60 per cent of their rated capacity.

Some idea of the extent to which cracking stills are being operated in this area can be gotten from the fact that on June 15, 1925, 95,390 bbls. of daily charging capacity of cracking stills were in actual operation while the total "shell" still capacity in actual operation May 1, 1925, was 109,000 bbls.

This means that "shell" stills with a capacity of 109,000 bbls. a day were removing the gasoline naturally in the crude while cracking stills with 95,390 bbls. of daily capacity were "manufacturing" gasoline out of distillates from the shell stills.

Output of Plants

It also means that during 1925 something like 109,000 bbls. daily capacity of shell stills made an average of 858,000 gallons a day of straight run gasoline and that something like 95,000 bbls. daily capacity of cracking stills made an average of 722,000 gallons a day of cracked gasoline.

This very striking situation is emphasized by the following tabulation:

Type of Still—	Dly. Cap. Barrels	Dly. Output Gallons
Shell	109,000	858,000
Cracking	95,000	722,000

And if the "potential" capacity of cracking units in the other and larger refining areas becomes operative to something like the extent to which cracking units are operating today in the Rocky Mountain area it will not be difficult to estimate some of the changes that will have resulted from the greatly reduced refinery requirements for crude oil.

It will be remembered that in the early development of Wyoming the biggest problem was to find a market for fuel oil of which a relatively large quantity was made. The local mrket for gasoline was small—and for fuel oil, smaller. Hence fuel oil early became a direct problem with the refiners—and an indirect problem with the producers of crude oil.

And it was because the major problem was fuel oil that the Midwest Refining Co., now a subsidiary of the Standard of Indiana, early embarked on a cracking program which is today one of the outstanding features of refining in Wyoming.

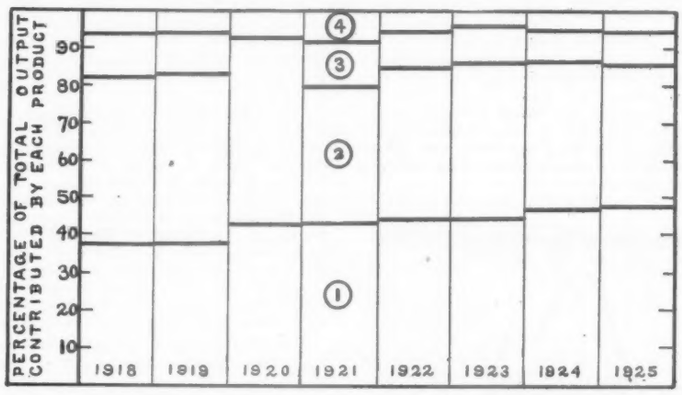
Reason for Cracking

Around 70 per cent of the crude produced in the Rocky Mountain area ranges between 36 and 37.9 gravity and, by regular fractionation, yields substantially more fuel oil than gasoline. In fact, by referring to the accompanying graph, it will be seen that during 1918 and 1919 more fuel oil than gasoline was made. In January, 1920, however, the gasoline recovery line swung up over the fuel oil line—and in the six years since that time there have been only three months (April and May, 1921, and December, 1922) when more fuel oil than gasoline was made.

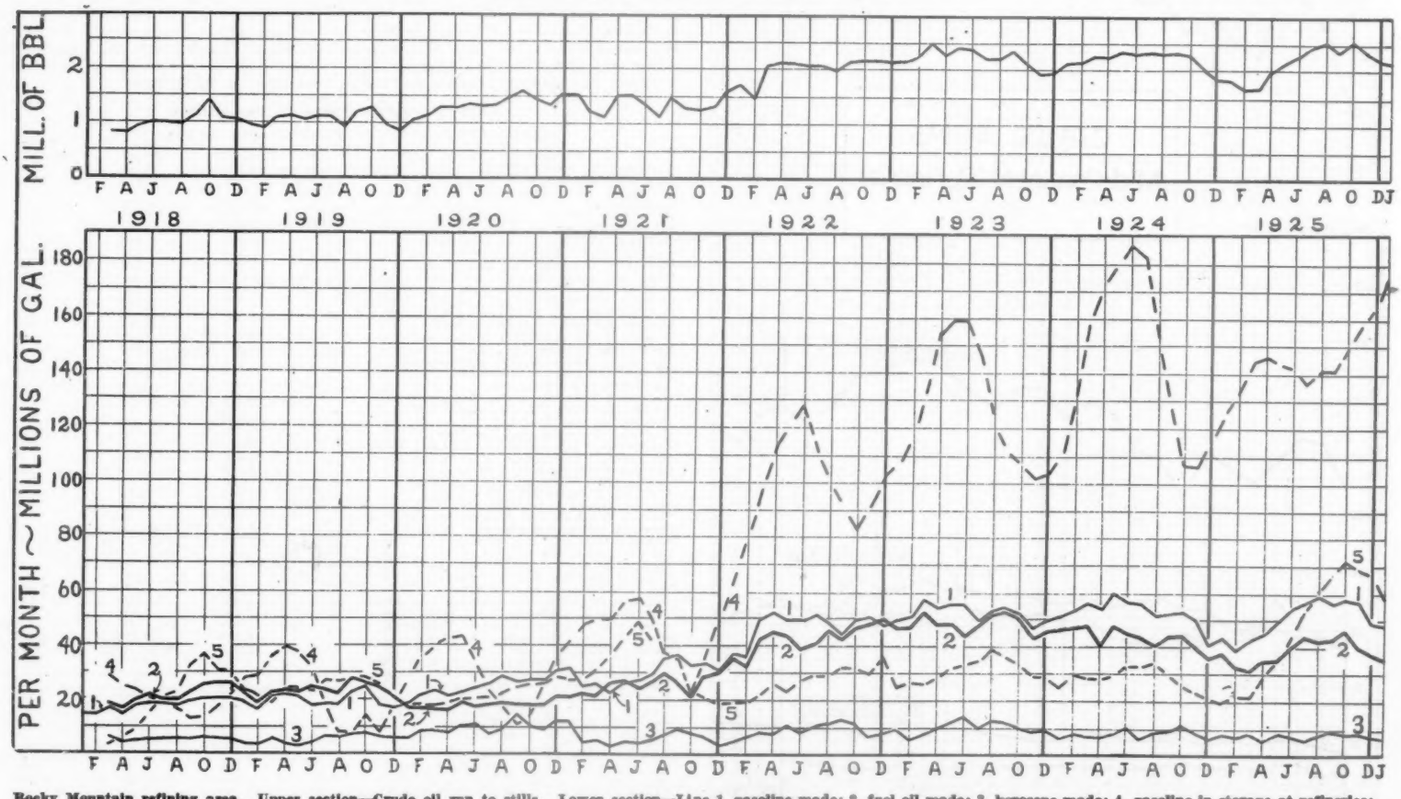
The amount of lubricating oil recovered from the average barrel of crude oil refined in this area is so small that the "lubricating oil line" was omitted from the accompanying graph.

In striking contrast to the other refining areas the output lines for gasoline and fuel oil have traveled very closely together—and only during 1924 and 1925

(Continued on Page 114)



Rocky Mountain refining area. Percentage recovery of four major products, based on net refinery runs. Space 1, gasoline recovery; space 2, fuel oil recovery; space 3, kerosene, including the small recovery of lubricating oil; space 4, all other products. For 1920 the middle space represents the combined recovery of fuel oil, kerosene and lubricating oil, the lower space representing gasoline and the upper space all other products. Distribution between fuel oil and kerosene not obtained.



Rocky Mountain refining area. Upper section—Crude oil run to stills. Lower section—Line 1, gasoline made; 2, fuel oil made; 3, kerosene made; 4, gasoline in storage at refineries; 5, fuel oil in storage at refineries.

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Cowen Oil & Refining Company	Los Angeles, Cal.	2
Central Oil Company	Los Angeles, Cal.	1
Dixie Oil Co. (Standard of Indiana)	Chicago, Illinois	2
Daugherty Company, Inc. H. K.	Bradford, Pa.	1
Gilliland Oil Company	Tulsa, Oklahoma	2
Harland Oil Company	Tulsa, Oklahoma	2
Huber Company, J. M.	Swartz, Louisiana	1
Hur-Bar Gasoline Company	Tulsa, Oklahoma	1
Hurley-Texas Gasoline Company	Tulsa, Oklahoma	1
Hurley Gasoline Company	Tulsa, Oklahoma	2
Lewis Oil Company	Pittsburgh, Pa.	1
Manhattan Oil Company	Kansas City, Mo.	1
Natural Gas & Fuel Company	Eldorado, Ark.	1
Oklahoma-Eastern Oil Co. (Devonian)	Tulsa, Oklahoma	2
Ohio Oil Company	Shreveport, La.	2
Oklahoma Gasoline Plants, Inc.	Oklahoma City, Okla.	1
Powers, M. F.	Tulsa, Oklahoma	2
Pure Oil Company	Columbus, Ohio	1
Phillips Petroleum Company	Bartlesville, Okla.	2
Phillips Company, Waite	Tulsa, Oklahoma	1
Palmer Corporation	Shreveport, La.	1
Pacific National Gasoline Company	Los Angeles, Cal.	7
Sloan & Zook Company	Bradford, Pa.	1
Sinclair Oil & Gas Company	Tulsa, Oklahoma	1
Saint Helens Petroleum Company	Los Angeles, Cal.	4
Texas Company, The	Tulsa, Oklahoma	1
Texas and Pacific Coal & Oil Co.	Fort Worth, Texas	1
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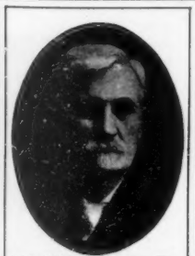

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Good progress has been made in the past 12 months by both producers and refiners in learning and practicing the lesson of self-restraint. Operators have realized the folly of "drilling their heads off" and refiners have understood that throughput is less important than what they get for their output.

But in the distributing end of the business a great many seem still to be clinging to the notion that gallonage is everything. They do not appear able to get away from it and have even been perverting methods designed to check it into greater abuses.

Just now the marketing division is in an uproar over quantity discounts. Initiated originally by cut-price competition under cover it was met by formal public adoption as a legitimate business policy in general use in many other lines of trade.

Customers buying large and regular quantities, reducing handling costs and minimizing sales expense, are regarded as rightfully entitled to a lesser charge than the occasional buyer of a small quantity.

Public bus lines, large trucking concerns, big department stores, industrial and commercial fleets, buying gasoline at designated delivery points in wholesale quantities compared to the individual purchaser of five gallons at a filling station demanded and insisted they were entitled to a share in the saving to the distributor in handling and sales costs.

In practically any other line of business this would be and is recognized as just and granted without question. In fact, it had originally been taken up by cut-price competition in the gasoline business as a natural rebate that might be granted under cover to get the business of motor fleet owners.

But when it was dragged out into the open and proposed as a settled policy known fairly to everybody, what a clamor arose. Instantly it was denounced as everything that was vicious. It has become a storm center in the industry with possibilities that may menace the marketing situation for the year, not for distributors only but for refiners and producers as well.

It is now pretty well understood, better than it used to be, that with crude stocks what they are, the price paid for crude will depend very largely upon the price obtained for gasoline. If the gasoline market is demoralized in the height of the consuming season by the greed for gallonage regardless of profit the producing and refining branches are directly interested.

The danger lies in the widespread abuse of the quantity discount principle. Just as it was originally resorted to by price cutters under cover to get the business of fleet owners the public proclamation of the principle has been abused by gallonage seekers to get unfair advantage over competitors.

Quantity discount rates have been extended to all sorts of cases, automobile clubs, farmers' associations, employes of corporations, occupants of office buildings, residents in apartment houses, and any sort of classification that could be devised to attract trade.

The immediate effect, of course, is the falling off in the business of those who have not been able to get that sort of trade. It has been particularly hard upon those having only a few stations and as these are the most numerous class of marketers they have been making themselves heard.

As it stands, the situation is being befogged by controversy over motives and responsibility. The real and practical issue is to arrive at a definite and reasonable limit on the use, rather than the abuse of the quantity discount.

The principle is sound but the application has been woefully misused.

The test of eligibility for quantity discount is simple enough—is the buyer entitled to it by reason of quantity delivery and saving in sales cost?

Members of an automobile club, farmers' associations or any organization or class who buy only as individuals are certainly not justified by this test.

The distributor who extends the quantity discount to that degree to get gallonage is simply cutting the ground from under his own feet. As the practice spreads it will be only a matter of time until everybody is claiming or getting quantity discount and the last stage of the gallonage seeker will be worse than the first.

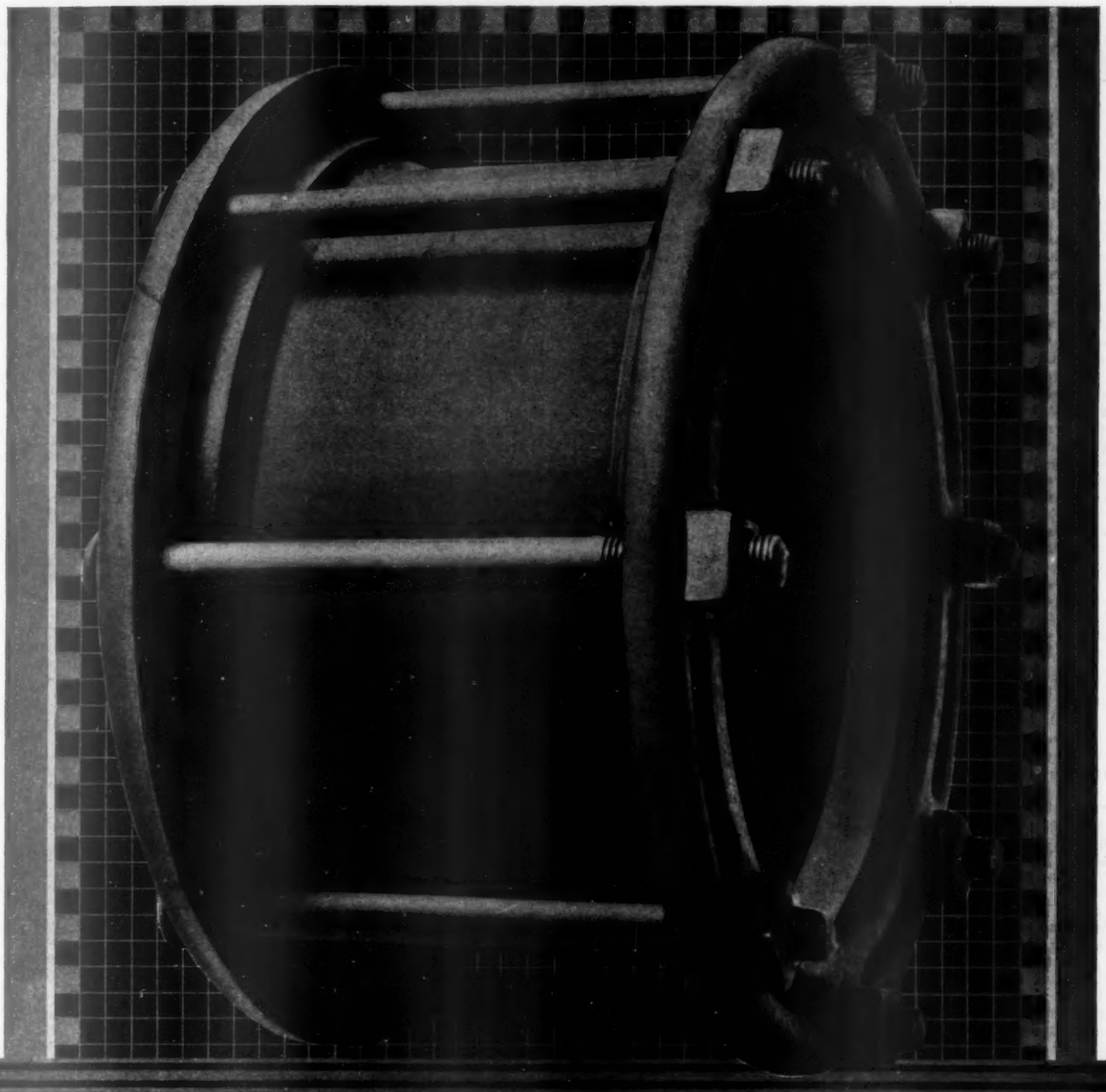
And he will find no comfort in trying to tell the world that it was all a wicked conspiracy to ruin him in the first place.

It seems like a hopeless snarl, as most marketing controversies get to be when argument is mistaken for reasoning. What it does show is the difficulty of eradicating this obsession about gallonage that appears to hold the gasoline business so firmly.

No man who is in business for profit—and if he does not know that profit is essential to staying in business he has no business being in business—would make such a mistake more than once. But in the distribution of gasoline it is being made year after year, if not in one form, then in another.

Abusing the quantity discount principle to get rid of more gasoline and at the same time break the market and destroy profit seems so plain a case of cause and effect that anybody ought to be able to see it. But, instead, time and effort will be wasted trying to blame somebody else for it.

Is it any wonder that with so many people in the gasoline business apparently blind to plain business principles that it is as chaotic as it is and that the tendency to concentration in integrated companies in growing year by year?



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BRADFORD, PA.

Inglewood Well An Important Factor

Production of Field Expected to Be Increased Materially. Salt Water Affects Output at Garber and Wewoka

The bringing in of a 1,500-bbl. 23 gravity well from the deep zone in the Inglewood Field in California; the encroachment of salt water in large quantities in the deep sand wells in the Garber and Wewoka Fields in Oklahoma; a disastrous storm in the Gulf Coast area which destroyed hundreds of derricks, causing a suspension of operations for a time and resulting in a drop in production of more than 14,000 bbls. daily; the drilling in of the Cane Creek well about 20 miles south of Moab, Utah, which flowed about 2,000 bbls. of 38 gravity crude and further promising developments in the field near Saginaw, Mich., were outstanding developments in oil field operations during the past week. A summary of the leading features of the week in each field is given below and further details are contained in the complete field reports in the following pages of this issue.

California

Of considerable importance in California and, probably, to the general petroleum situation of the entire country, is the completion by the Associated Oil Co. of its No. 2 Vickers in the deep zone of the Inglewood Field, the well flowing 1,500 bbls. of 23 gravity crude. Much depends upon the attitude in regard to drilling to this deep zone of other large oil companies having holdings which can be developed. It is estimated the new zone may result in an increase in Inglewood's production of about 25,000 bbls. daily by the middle of July. Another important development in California was the completion, also by the Associated, of its No. 101 Lloyd in the extreme eastern part of the Ventura Avenue Field, as outlined in The Oil and Gas Journal last week and further discussed in the California Field report in this issue. The well marks an important extension to the field and further drilling may extend the limits still further. An interesting development at Huntington Beach was the changing for some unknown reason of a 55-bbl. pumping well into one flowing 795 bbls.

Oklahoma

With the Sinclair Oil & Gas Co.'s No. 27 Hartley in the Garber Field producing 11,136 bbls. of oil and 2,400 bbls. of water during the 24 hours ending Tuesday morning of this week, as compared to more than 25,000 bbls. of oil a day at the beginning of the week before, the rapid decline of gushers permitted to flow wide open is seen. Salt water also started its encroachment in the deep sand wells of the Wewoka Field where the Magnolia Petroleum Co.'s discovery well was cutting about 3 per cent. Three important tests are nearing the deep sand horizon at Wewoka and that field showed quite a substantial increase in production during the past week. The Sun Ray Oil Co. and Munn Brothers completed a well starting at the rate of 125 bbls. an hour in the Chicken Farm Pool a few miles south of Tulsa.

Gulf Coast

A decrease of more than 14,000 bbls. daily in the average production of the Gulf Coast area was registered during the past week as a result of a terrific storm which blew down more than 500 derricks over pumping and other producing wells, stopping operations in many instances.

Louisiana-Arkansas

Operators in Louisiana and Arkansas are displaying more interest in wildcatting than usual and several areas show promise of being commercially productive. The new Lisbon Field showed a decline both in initial production and daily average output but the Urania Field continues as the most active section in either state. In that field there are 14 wells waiting for standard rigs, 37 drilling, 6 rigging up and 20 derricks standing.

Southwest Texas

The completion in the Cole gas field of southwest Texas by the Humphrey-Moody-Seagraves well on Block 5, Section 10, a mile northeast of the Cin-Tex Oil Co.'s discovery oil well gave operators some hope that the dividing line between the gas and oil production in the field had been found. The well made 35,000,000 feet of gas and a little oil. Two wells making dry gas and one with wet gas were completed in the field. Interest in the Piedras Pintas salt dome field centered in the test of Moody-Seagraves and William F. Morgan which was ready to bail.

Moody-Seagraves and W. F. Morgan's No. 1 Walsh, offsetting the Humble discovery in Piedras Pintas Dome, Duval County, bailed to 2,000 feet, got considerable oil and gas and some salt water. They will attempt to plug off the bottom believing they drilled too deep. The discovery well also made a small percentage of salt water and operators are not discouraged.

Michigan

Bliss Petroleum Co.'s well, a quarter of a mile northeast of the discovery well at Saginaw, averaged 26 bbls. for seven days under pump. The four wells of the Saginaw company are pumping 50 bbls. daily.

The Sun Oil Co.'s well, a half mile north of the discovery well, was shot and when agitated by swabbing flowed, showing for the best well in the new field.

A showing of oil is reported from a test 5 miles west of Port Huron in St. Clair County.

Rocky Mountain Area

Increasing attention is being directed to the oil possibilities of states west of Wyoming and Montana. The New York Oil Co. has selected a structure near Aberdeen, Wash., and is drilling a test there. Other companies have geologists examining territory in Idaho, Oregon and Washington. A structure near Harney Basin, Oregon, and one near Dog Mountain are also being considered. A new wildcat campaign in Montana is also reported being planned.

The deep well of the Transcontinental in La Barge Field is dry but a second test is to be made. The Argo company is to drill its deep well in Pilot Butte Field deeper.

New Mexico

Pipe line runs for the last 15 days in March totaled 45,510 bbls. A slight decrease was shown due to paraffin and sand trouble which is being overcome.

Considerable acreage has changed hands in the vicinity of the Maljamar company's Baish wildcat, which continues to make 6,000,000 feet of gas after being in 12 days. The gas is reported of high gasoline content.

The Continental company has sold some of its Rattlesnake and Table Mesa Oil to the Humble company.

Texas Panhandle

Despite extremely unfavorable weather which cut down operations in the Texas Panhandle the output has shown a considerable gain.

The Marland company is hauling material for a test in the bed of the Canadian River in Hutchinson County which is attracting much attention because of the reputation of the river for quicksands.

Utah

The Cane Creek well of the Midwest and Utah Southern companies, south of Moab, Utah, close to the Colorado line and on the Grand River, when drilled in flowed 38 gravity oil with an estimated production of 2,000 bbls. The cement failed and the well is again shut in.

North Central Texas

A third producer is reported in the Roeser and Pendleton Pool north of Albany in Shackelford County. The Humble company's offset to the discovery tract is reported making 25 bbls. an hour at 100 feet deeper, due to elevation. Roeser & Pendleton's second well, an offset to the Humble, is making 32 bbls. an hour.

In northeastern Throckmorton County the Red Bank Oil Co.'s No. 1 Parrot, a new wildcat, 2 miles from the Reiter-Foster production on the Stubblefield land, is showing for a good producer, apparently from the same formation.

The Badger Oil Co. has a 500,000-foot gas showing 3 miles southwest of the big south Hutchinson County production.

The Humble and Navarro companies' wildcat in Foard County is showing some oil, the first of any importance in that county.

North Brown County, with several new producers, is continuing its activity. A third completion is reported from the Dibrell Pool in northeastern Coleman County.

Magnolia company's No. 1 University, formerly Church & Fields, in Crane County, shut down for several days awaiting storage, made one flow unaided of 75 bbls.

Pennsylvania, Ohio, West Virginia

A remarkable feature of the eastern fields was that southwest Pennsylvania did not produce a barrel of new production for a month. The Big Injun sand development in Henry district, Clay County, continues to furnish producers, the South Penn company getting several and the Virginian Gasoline & Oil Co. one. Southeastern Ohio continues to be the most promising area in the eastern fields.

Kentucky-Tennessee

F. F. Blancard's deep wildcat test northwest of the Sandidge Pool in Warren County, Kentucky, the first wildcat in that area in two years, is attracting much attention. If productive it is hoped to extend the field over into Edmonson County.

The Tennessee Stave & Lumber Co. test in north central Fentress County, Tennessee, is reported making from 5 to 10 bbls. naturally. This is half way between the Tinsley Bottom Field in Clay County and the Bone Camp Pool in Morgan County.

Michigan and Central West

The bringing in of the Bliss Petroleum Co.'s well north of the Saginaw, Mich., producers has increased interest. The Sun Oil Co.'s test farther north may be completed within a week. There is now talk of extensions into Bay County and other Michigan Counties and a great leasing activity.

Plans are under way for resumption of activity in Paulding County and Hardin County, Ohio, Fields. Allendale Field, Illinois, has several good producers.

Late News From the Fields

MEXICO

NEW YORK, Apr. 6.—Mexican Eagle Oil Co. and Pan American Petroleum & Transport Co., joint operators, have completed No. 33 Cerro Viejo in the Mexican light oil district for initial production of 10,000 bbls. at depth of 2,131 feet. Compania Transcontinental de Petroleo, S. A. (Standard Oil Co. of New Jersey) has completed No. 22 Barberena in the northern (heavy oil) field for 15,000 bbls. initial at depth of 1,640 feet.

OKLAHOMA

In the Garber Field, the Sinclair Oil & Gas Co.'s No. 27 Hartley was down to 11,136 bbls. of oil and 2,400 bbls. of water on Tuesday morning, and No. 30 Walker, its west offset, had declined to 2,180 bbls. of oil and 1,000 bbls. of water.

In the Wewoka Field, the deep sand production from six wells totaled 26,870 bbls. Monday morning. The discovery well in the deep pay, Magnolia Petroleum Co.'s No. 1 Harjo, in the NW cor. of Section 5-7-8, started making about 2 per cent water and b.s. Saturday and the percentage was reported Tuesday as 3.5. This well's output Monday was 4,391 bbls. and on Tuesday was 3,793 bbls. The same company's No. 3 Franz, north offset to the discovery, bridged Sunday and since then has been flowing by heads but was still producing 2,746 bbls. Monday. The Ameranda Petroleum Corp.'s No. 1 Dennis flowed 6,625 bbls. and No. 3 made 6,510 bbls., according to Tuesday's gauge. The Homa-Okla Oil Co.'s No. 2 Carolina was good for 4,585 bbls. Tuesday after it had been deepened a foot to 4,112 feet.

The Independent Oil & Gas Co. and Atlantic Oil Producing Co.'s No. 1 in the SW cor. NW of Section 5-7-8, just two locations south of the Wewoka deep sand producers, was troubled with a cavey hole and expected to have pipe on bottom by Tuesday night. Total depth was 4,086 feet Tuesday.

The Continental Oil Co.'s No. 3 Williams, C NW SE SW, Section 28-11-8, eastern Seminole County, had a sand at 3,520-56 feet which was estimated good for 175 bbls. following a shot of 20 quarts.

In Noble County, the Reiter-Foster Oil Corp. and Elaine Oil Co.'s No. 1 Burke, C SE, Section 33-22-2w, made a flow Monday afternoon after the bailer was run and a 500-bbl. storage tank is being erected. The sand record is 4,683-85 feet, and there is about 2,000 feet of oil in the hole.

In the Davenport Pool, Lincoln County, the latest gauge on the Magnolia Petroleum Co.'s No. 1 Martin, NE cor. NW SW, Section 8-14-5, was 11 bbls. of oil and 29 bbls. of water. The same company's No. 4 Belles, NW cor. SW SW, Section 3-14-5, was good for 213 bbls. at 3,440-53 feet. The Pure Oil Co.'s No. 1 Strough, NE cor. SE SE, Section 4-14-5, made 207 bbls. naturally from sand at 3,452-67 feet and was to be shot. The Southwestern Petroleum Co.'s No. 3 Roberson, NE cor. NW NE, Section 11-14-5, produced 322 bbls. of 47 degree gravity crude from sand at 3,401-40 feet.

North of the Wewoka Pool, in Seminole County, T. Atkins and others found a hole full of water in their No. 1 Miller, C NE NE NW, Section 9-8-8, at 3,653 feet, total depth.

In the Yeager Pool, W. R. Ramsey's No. 2 Pickens, NW cor. NE SE, Section 19-8-10, was deepened four feet to total depth of 3,474 feet and was estimated good for 25 bbls. on the pump.

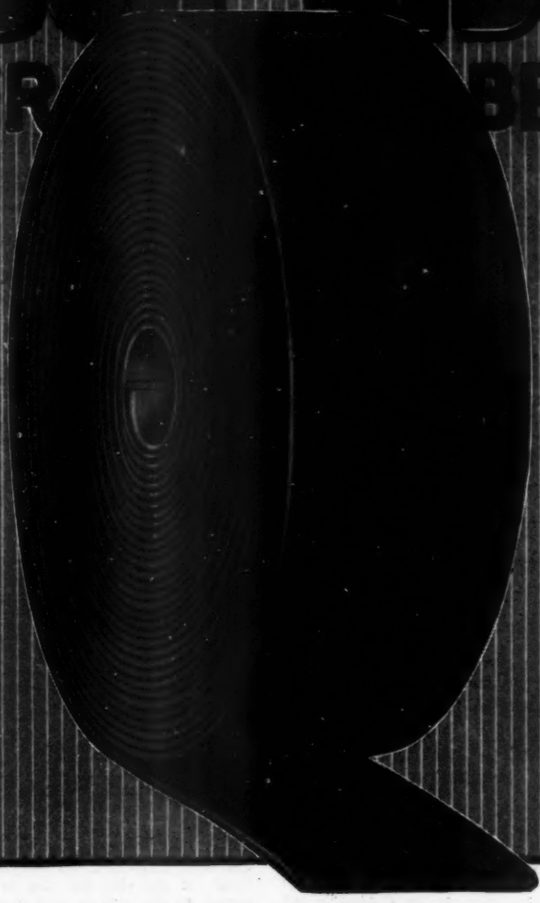
In the Deep Rock Pool of Payne County, the Deep Rock Oil & Refining Co.'s No. 5 Boyles, NE cor. SW SE, Section 23-18-3, produced 1,552 bbls. Sunday.

In the Oklahoma Panhandle region, H. F. Wilcox Oil & Gas Co.'s No. 1 Zea, SW cor. SE, Section 29-3-13, Texas County, was drilling out cement at 2,222 feet and the same company's No. 1 Hovey,

(Continued on Page 148)

"ROUGH RIDER"

RUBBER BELTING



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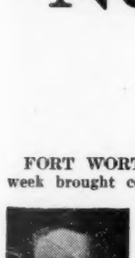
CONTINENTAL

New Producer in Shackelford Pool

Wildcat in Throckmorton County Standing Full of Oil. Probable Extension of South Hutchinson County Area

By George R. Kelley
Staff Correspondent, North Central Texas

FORT WORTH, Tex., Apr. 5.—This week brought considerable new development of interest in the North and West Texas territory. It brought one new producer in the Roeser and Pendleton Pool north of Albany in Shackelford County; it brought an entirely new wildcat in northeastern Throckmorton County and the extension of or the probable extension of the producing area in south Hutchinson County in the Texas Panhandle area.



The new well in the Roeser and Pendleton Pool is the Humble Oil & Refining Co.'s No. 1 Cook, an offset to the Roeser and Pendleton discovery, or rather an offset to the tract on which the discovery was drilled. The Humble well is about three locations from the discovery well. The Humble well started off with a production of 30 bbls. per hour and is now reported making 25 bbls. an hour steadily. The depth is 1,344 to 1,347 feet, just 100 feet deeper than the Roeser and Pendleton discovery. But this is due altogether to elevation.

In northeastern Throckmorton County the Red Bank Oil Co.'s No. 1 Parrot is showing for a good producer from the lime formation, which was encountered at 3,929 feet, and has been drilled into only 1 foot. The hole is standing full of oil into which 5-inch casing is being run, and storage is being erected. This well is about 2 miles northwest of the Reiter-Foster production on the Stubblefield land and is apparently coming from the same formation.

In Hutchinson County the Badger Oil Co.'s No. 1 Lewis is showing for about 500,000 feet of gas at 2,810 feet and has been shut down awaiting the clearing of the storm in that section before proceeding further. The well is also reported to have had a light showing of oil. The well is between 3 and 4 miles southwest of the big south Hutchinson County production in Block Y of the Morris and Cummings survey.

Foard County Showing

Another North Texas wildcat is reported showing some oil. It is the joint well of the Humble Oil & Refining Co. and the Navarro Oil Co. on the Easley farm in Foard County. A sand was encountered at 2,774 feet and drilled to 2,779 feet. Some oil showed and the sand is being tested. This is a rank wildcat. There is no production in Foard County and this is the first showing of any importance ever encountered in the county.

The north Brown County shallow area continues to be one of the most active spots in the whole of North Central Texas. There were a total of 11 completions reported from Brown County this week, all but 2 being producers, the 9 oil wells having a new production of 2,055 bbls. flush. The largest completion is the E. L. Smith Oil Co.'s No. 1 Dunn, which is making 1,200 bbls. from the sand at 1,125 feet.

There are two new producers in this area not yet completed. One is Barkley and others' No. 4 Dunn, which is making 520 bbls. daily from the sand topped at 1,101 feet and drilled into a total of 13 feet. The other is the Humble Oil & Refining Co.'s No. 4 Allen, making 300 bbls. flush from the sand at 1,109 to 1,125 feet.

In southern Callahan County the Mook Texas Oil Co.'s No. 1 Baum is showing for a gasser at 1,625 feet. The well is just in the top of the gas sand and making 1,000,000 feet daily.

In the Archer County area, the Atlantic Oil Producing Co.'s No. 3 Rachuig is swabbing oil at the rate of 200 bbls. daily from a sand at 1,163-74 feet. This property originally belonged to the Camp Oil & Gas Co. of Fort Worth. The Texas Company's No. 5 Jeske, reported last week as one of the real big producers of Archer County, is still flowing at the rate of 25 bbls. an hour.

There is one new producer in northern Young County, on the well-known Benson lands, Carter and others' No. 5 Benson. It is a comparatively small well, rated at 12 bbls. daily. Preparations are being made to put the well on the pump.

In the Upton Crane County area the Dixie Oil Co.'s No. 2 Burleson is standing 200 feet in oil from a sand topped at 2,185 feet. It is still drilling, at last reports having reached a depth of 2,215 feet.

In northeastern Crane County the Magnolia Petroleum Co.'s No. 1 University, formerly Church and Fields, has been cleaned out to within 12 feet of the bottom of the hole. Late reports said the well had been shut down for the present.

In Crockett County the Magnolia Petroleum Co.'s No. 2 Shannon is making a half bailer of oil an hour from a sand at 2,428 feet. The oil is coming from a brown lime formation and is reported to be of a very low gravity. The specific gravity is said to be not above 10 degrees.

Small Gain in Production

Production, that is average daily runs, shows a small gain this week compared with that of the previous week. Total daily average this week is 171,455 bbls., while the daily average last week was only 170,560 bbls., a gain of 895 bbls.

While there were a total of 99 completions in this territory during the week, this is considerably short of the record of last week when there were a total of 131 completions. Of this week's completions 69 were producers, 27 were failures and 3 were gas wells. New production amounted to 9,145 bbls. as against 5,808 bbls. last week from 78 new producers. This week's new production was boosted somewhat by northern Brown County, Reagan County and Archer and Wilbarger Counties. Reagan County had three new completions, all producers by the Big Lake Oil Co., with a total new production of 2,490 bbls.

The following table gives the completions by counties, together with the totals for this week and the week previous:

County—	Comp.	Prod.	Dry	Gas	New Prod.
Wichita	9	8	1	0	355
Wilbarger	10	8	2	0	785
Archer	27	19	8	0	960
Young	10	5	5	0	200
Brown	11	9	2	0	2,055
Coleman	5	2	2	1	*290
Mitchell	5	5	0	0	535
Montague	6	5	1	0	515
Reagan	3	3	0	0	2,490
Hutchinson	3	3	0	1	425
Stephens	1	0	0	1	*0
Eastland	2	1	1	0	10
Shackelford	2	0	2	0	..
Palto Pinto	1	0	1	0	..
Loving	1	0	1	0	..
Clay	1	1	0	0	45
Baylor	1	0	1	0	..
Gray	1	1	0	0	380
Total this wk.	99	69	27	3	9,145
Total last wk.	131	79	51	1	5,808
Difference	32	10	24	2	3,337

*One gas well in Brown County had a production of 1,000,000 feet, one in Hutchinson had a production of 8,000,000 feet and one in Stephens County had 5,000,000 feet daily.

PRODUCTION REPORT
For Week Ending April 1, 1926

Burkburnett		
Gulf Production Co.	465	
Humble Oil & Refg. Co.	350	
Magnolia Pet. Co.	2,600	
Panhandle Refg. Co.	255	
Prairie O. & G. Co.	20	
Sinclair O. & G. Co.	55	
Skelly Oil Co.	165	
Sun Oil Co.	60	
The Texas Company	360	
Texhoma O. & R. Co.	570	
Miscellaneous	7,750	
Total		12,640
Electra		
Atlantic O. P. Co.	50	
Empire Gas & Fuel Co.	860	
Gulf Production Co.	990	
Humble O. & R. Co.	105	
Magnolia Pet. Co.	3,300	
Panhandle Refg. Co.	30	
Phillips Pet. Co.	15	
Prairie O. & G. Co.	110	
Rio Bravo Oil Co.	520	
The Texas Company	3,490	
Texhoma O. & R. Co.	1,560	
Miscellaneous	6,260	
Total		17,290
Iowa Park		
Atlantic O. P. Co.	100	
Gulf Production Co.	120	
Humble O. & R. Co.	205	
Magnolia Pet. Co.	485	
Panhandle Refg. Co.	30	
Roxana Pet. Co.	10	
The Texas Company	290	
Texhoma O. & R. Co.	195	
Miscellaneous	3,315	
Total		4,750
Wilbarger County		
Atlantic O. P. Co.	125	
Gulf Production Co.	40	
Humble O. & R. Co.	4,060	
Landreth Production Co.	4,200	
Prairie O. & G. Co.	30	
Roxana Pet. Co.	515	
The Texas Company	45	
Texhoma O. & R. Co.	105	
Miscellaneous	5,575	
Total		14,745
Archer County		
Atlantic O. P. Co.	320	
Cosden Co.	265	
Empire Gas & Fuel Co.	720	
Gulf Production Co.	2,555	
Humble O. & R. Co.	455	
Independent O. & G. Co.	10	
Magnolia Pet. Co.	1,545	
Marland Oil Co.	560	
Panhandle Refg. Co.	125	
Phillips Pet. Co.	785	
Waite Phillips	1,480	
Prairie O. & G. Co.	2,530	
Roxana Pet. Co.	405	
Simms Oil Co.	530	
Sun Oil Co.	250	
The Texas Company	3,500	
Texhoma O. & R. Co.	3,565	
Tidal Oil Co.	60	
Miscellaneous	14,235	
Total		33,895
Stephens County		
Atlantic O. P. Co.	30	
Empire Gas & Fuel Co.	30	
Gulf Production Co.	1,350	
Humble O. & R. Co.	695	
Magnolia Pet. Co.	375	
Mid-Kansas Oil & Gas Co.	3,085	
Phillips Pet. Co.	50	
Prairie O. & G. Co.	875	
Republic Prod. Co.	125	
Roxana Pet. Co.	50	
Simms Oil Co.	50	
Sinclair O. & G. Co.	75	
Sun Oil Co.	150	
The Texas Company	1,050	
T. P. Coal & Oil Co.	1,170	
Miscellaneous	5,025	
Total		14,185
Ranger		
Gulf Production Co.	235	
Humble O. & R. Co.	40	
Magnolia Pet. Co.	850	
Mid-Kansas O. & G. Co.	140	
Panhandle Refg. Co.	125	
Prairie O. & G. Co.	630	
Republic Prod. Co.	50	
Sinclair O. & G. Co.	325	
The Texas Company	130	
T. P. Coal & Oil Co.	750	
Miscellaneous	2,220	
Total		5,495
Moran		
Empire Gas & Fuel Co.	30	
Humble O. & R. Co.	10	
Magnolia Pet. Co.	30	
Phillips Pet. Co.	735	
Prairie O. & G. Co.	35	
The Texas Company	220	
Texhoma O. & R. Co.	90	
Miscellaneous	1,670	
Total		2,850
Young County		
Gulf Production Co.	210	
Humble O. & R. Co.	360	
Magnolia Pet. Co.	210	
Mid-Kansas O. & G. Co.	15	
Panhandle Refg. Co.	140	
Prairie O. & G. Co.	15	
Roxana Pet. Co.	135	

PANHANDLE OUTPUT SHOWS GAIN DESPITE UNFAVORABLE WEATHER

By George R. Kelley
Staff Correspondent, Texas Panhandle

AMARILLO, Tex., Apr. 3.—In spite of the extremely unfavorable weather that has prevailed in the Panhandle territory the past week, work in the oil fields has gone forward in a very satisfactory manner. Although some of the wells and in some instances entire leases are off production, the average daily output of the field showed a considerable gain over the daily runs of the previous week. This was due very largely to some new wells that added heavy runs to the pipe lines. Hutchinson County is producing 7,235 bbls. daily, Carson 1,800 bbls., Gray County 470 bbls., and Wheeler County 120 bbls. daily.

During practically the whole of the past week the Canadian River Oil Co.'s Whittenburg lease has been off production as it has been impossible to move the production from the lease on account of the stormy weather. At the same time the lease of the Sunny Jim Oil Co. has very materially increased its production, No. 1 J. A. Whittenburg having come in and boosted the output to 440 bbls. daily.

Also the output of the Whittenburg lease of the Westex Oil Co. has been materially increased, due to the shooting of No. 1 well. The production of this well was increased by a 90-quart shot to an average of 1,075 bbls. daily and No. 2 is still flowing at the rate of 325 bbls. a day. The Travelers Oil Co. also shot its No. 1 and boosted its production to 175 bbls.

The American Refining Co.'s No. 1 J. A. Whittenburg has been shot with 120 quarts at 2,775 to 2,808 feet, though the result of the shot has not been determined, as the well is shut down on account of bad weather. It was originally making 15,000,000 feet of gas at 2,560 to 2,600 feet.

The Sunny Jim Oil Co.'s No. 1 J. A. Whittenburg has been drilled into the pay formation and to a total depth of 2,996 feet. At this depth it flowed 320 bbls. of oil in 13 hours. Currie Brothers and others' No. 1 Smith is spraying about 40 bbls. of oil daily. This oil was found at 2,903 feet and the well is still drilling at 2,932 feet.

Marland Oil Co. has made the location for its first well to be drilled in the bed of the treacherous Canadian River and is now hauling out material for the derrick. The location is 313 feet south and 749 feet west of the northeast corner of Survey 76, Block 46 of the H. & T. C. Railway Co. survey of Hutchinson County. There is considerable speculation as to the outcome of this effort. Quite frequently the bed of the Canadian River is nothing but a shifting, treacherous mass of quicksand and there are many, especially among the old-timers in the Panhandle, who doubt the possibility of successful operation in the river bed.

No. 2 G. A. Whittenburg of the Phillips Petroleum Co. and Gibson Oil Corp. is a new producer not yet completed. It is swabbing oil at the rate of 240 bbls. from the formation at 2,930 to 2,938 feet and still drilling at 2,946 feet. No. 1 J. A. Whittenburg, of the same opera-

(Continued on Page 149)

Simms Oil Co.	340	
Sinclair O. & G. Co.	355	
Sun Oil Co.	65	
The Texas Company	450	
Texhoma O. & R. Co.	340	
Tidal Oil Co.	270	
Miscellaneous	3,865	
Total		7,270
Eastland-Comanche		
Empire Gas & Fuel Co.	10	
Humble O. & R. Co.	125	
Magnolia Pet. Co.	675	
Mid-Kansas O. & G. Co.	170	
Phillips Pet. Co.	50	
Prairie Oil & Gas Co.	115	
Simms Oil Co.	30	
Sinclair O. & G. Co.	25	
Skelly Oil Co.	115	
The Texas Company	130	
T. P. Coal & Oil Co.	75	
Miscellaneous	1,300	
Total		2,820
Panhandle		
Hutchinson County	5,890	
Carson County	1,825	
Gray County	505	
Wheeler County	125	
Total		8,345
Miscellaneous Pools		
Clay County	430	
Montague County	1,850	
Jack County	85	
Throckmorton County	170	
Baylor County	240	
Palo Pinto County	415	
Brown County	7,060	
Coleman County	325	
Callahan County	3,880	
Mitchell County	3,505	
Reagan County	28,860	
Scurry County	40	
Crockett County	260	
Upton County	50	
Total		47,170
Total this week		171,455
Total last week		170,560
Gain		895

Wichita County Comp'etions

Bullington and others' No. 15 Jennings, is making 95 bbls. at 1,613 feet; Culberson Co.'s No. 36 Waggoner Brothers, 30 bbls. at 1,511 feet; Hammon and others' No. 36 Waggoner Brothers, 20 bbls. at 1,223 feet; Haynes and others' No. 1 Overby, 30 bbls. of oil and an equal amount of water at 1,248 feet; Perkins and others' No. 8 Beaver-Electra, 120 bbls. at 1,633 feet; Ryan Petroleum Co.'s No. 57 Nance, 10 bbls. at 494 feet; No. 58 Nance, 25 bbls. at 1,326 feet; Texhoma Oil & Refining Co.'s No. 1-C Edgerly, dry at 2,003 feet; No. 16 Waggoner Brothers, 15 bbls. at 602 feet.

Wilbarger County

Atlantic Oil Producing Co.'s No. 3 Sigler-Waggoner, 25 bbls. at 2,027 feet; Humble Oil & Refining Co.'s No. 1-N Waggoner, 65 bbls. at 1,920 feet; Landreth Production Co.'s No. 7-A Waggoner, 400 bbls. at 1,870 feet; No. 4-D Waggoner, dry at 2,638 feet; No. 5-F Waggoner, 60 bbls. at 1,921 feet; No. 2-G Waggoner, 150 bbls. at 1,900 feet; No. 2-H Waggoner, 30 bbls. at 1,897 feet; No. 2-M Waggoner, 10 bbls. at 2,385 feet; Magnolia Petroleum Co.'s No. 52 Sumner, dry at 2,115 feet; Milham Corp.'s No. 1-L Waggoner, 45 bbls. at 2,386 feet.

Archer County

Ashcraft and others' No. 1 Curry, dry at 1,802 feet; Burns and others' No. 1 Jackson, 50 bbls. at 1,559 feet; Dixie Oil Co.'s No. 1-D McCrory, dry at 1,600 feet; McCarty Oil Co.'s No. 23-B Wilson, 70 bbls. at 1,587 feet; Shappell Oil Co.'s No. 1-A Wilson, 35 bbls. at 1,612 feet; The Texas Company's No. 1-B Turbeville, dry at 1,803 feet; No. 11 Carter, 5 bbls. at 1,458 feet; Texhoma Oil & Refining Co.'s No. 2-A Parrish, 50 bbls. at 1,577 feet; Tidal Oil Co.'s No. 1 Griffin, dry at 1,865 feet; American Refining Co.'s No. 7 Portwood, 10 bbls. at 1,406 feet; B. S. & B. Oil Co.'s No. 1 Ward, dry at 1,004 feet; Camp Oil & Gas Co.'s No. 1 Bell, dry at 1,171 feet; Cosden & Co.'s No. 1-B Oldham, 260 bbls. at 1,381 feet; Humble Oil & Refining Co.'s No. 6 Hamilton, 25 bbls. at 1,232 feet; No. 1 Wolf, 75 bbls. at 1,364 feet; Ilsing Production Co.'s No. 1 Prideaux (Block 14), dry at 625 feet; Magnolia Petroleum Co.'s No. 14 Lowe, 30 bbls. at 1,249 feet; M. & V. Oil Co.'s No. 6 Kunkel, 35 bbls. at 1,174 feet; Pandem Oil Corp.'s No. 5 Young, 70 bbls. at 1,454 feet; Prairie Oil & Gas Co.'s No. 5 Kreeger, 5 bbls. at 1,424 feet; Primrose Petroleum Co.'s No. 7 Wolf, 50 bbls. at 1,370 feet; Red Bank Oil Co.'s No. 1 Dekinder, dry at 3,353 feet; Texhoma Oil & Refining Co.'s No. 5 Abercrombie-Taylor, 10 bbls. at 1,370 feet; The Texas Company's No. 7 Bearden, 135 bbls. at 1,067 feet; No. 19 Hill, 20 bbls. at 1,398 feet; No. 20 Hill, 30 bbls. at 1,370 feet; No. 2 Prideaux, 5 bbls. at 657 feet.

Young County

Adams and others' No. 1 McClatchey, dry at 1,123 feet; Atlantic Oil Producing Co.'s No. 2 Powell, dry at 1,508 feet; Bridwell and others' No. 11 Boren, 5 bbls. at 1,073 feet; Carter and others' No. 4 Benson, 85 bbls. at 925 feet; Christie and others' No. 1 Vernon, dry at 1,190 feet; Log Cabin Oil Co.'s No. 1 Calvin, dry at 1,003 feet; Underwood Drilling Co.'s No. 2 Benson, 25 bbls. at 879 feet; Atkinson and others' No. 1 Ford, 40 bbls. at 2,535 feet; Mann and others' No. 2-A Whittenburg, 45 bbls. at 1,789 feet; Stovall and others' No. 4 fee, is abandoned at 2,780 feet.

Stephens County

States Oil Corp.'s No. 3 Sikes, 5,000,000 feet of gas at 3,391 feet.

Eastland County

Magnolia Petroleum Co.'s No. 1-B McMinn, dry at 1,815 feet; Robert Oil Corp.'s No. 1 Wood, is making 10 bbls. at 1,705 feet.

Brown County

Barbour Oil Co.'s No. 3-A Prather, 140 bbls. at 1,326 feet; Conway Brothers' No. 3 Wooldridge, 40 bbls. at 1,243 feet; Gillespie and others' No. 1 Henson, 100 bbls. at 1,290 feet; Gilman and others' No. 3 Thompson, 25 bbls. at 1,233 feet; Herring and others' No. 1 Prather, 100 bbls. at 1,319 feet; Humble Oil & Refining Co.'s No. 1 Allen, dry at 1,165 feet; No. 3 Dunn, 300 bbls. at 1,123 feet; Schaffner and others' No. 8 Prather, 100 bbls. at 1,307 feet; Rocky River Oil Co.'s No. 1 Newton, dry at 1,485 feet; E. L. Smith Oil Co.'s No. 1 Dunn, 1,200 bbls. at 1,126 feet; West and others' No. 2 Newton, 50 bbls. at 1,216 feet.

Reagan County

Big Lake Oil Co.'s No. 56 University, 745 bbls. at 3,105 feet; No. 61 University, 1,225 bbls. at 2,935 feet; No. 62 University, 520 bbls. at 2,927 feet.

Coleman County

Bradshaw and others' No. 1 Watson, 5 bbls. at 410 feet; Gwinnup and others' No. 2 Dibrell, 385 bbls. at 1,903 feet; Morton and others' No. 1 Morris, dry at 2,614 feet; Nolan and others' No. 1 Brehn, dry at 1,615 feet; Gladys Belle Oil Co.'s No. 3 Watson, 1,000,000 feet of gas at 2,435 feet.

Mitchell County

Atlantic Oil Producing Co.'s No. 4 Womack, 85 bbls. at 3,076 feet; Eastland Oil Co.'s No. 1 Adams, 125 bbls. at 3,096 feet; California Co.'s No. 5 Elder, 100 bbls. at 3,050 feet; No. 5 Miller, 50 bbls. at 3,060 feet; No. 3 Womack, 175 bbls. at 3,085 feet.

Montague County

Benton and others' No. 3 Hinds' 110 bbls. at 966 feet; No. 4 Hinds, 90 bbls. at 970 feet; Flemming and others' No. 1 Hinds, 60 bbls. at 956 feet; Pure Oil Co.'s No. 5 Maddox, 60 bbls. at 956 feet; Texhoma Oil & Refining Co.'s No. 1 McGaughy, dry at 2,293 feet; No. 2 Rowland, 70 bbls. at 1,127 feet.

Shackelford County

Phillips Petroleum Co.'s No. 1 Hadley, dry at 730 feet; Van Duyne and others' No. 1 Gray, dry at 640 feet.

Palo Pinto County

Ochiltree and others' No. 2 Kinson, dry at 646 feet.

Loving County

Rio Grande Oil & Refining Co.'s No. 1 Johnson, dry at 3,508 feet.

Clay County

Lone Star Gas Co.'s No. 27 Waggoner, 45 bbls. at 1,800 feet.

Baylor County

Cosden & Co.'s No. 1 Garner, dry at 2,910 feet.

Hutchinson County

Middleton and others' No. 2 Weatherly, 8,000,000 feet of gas at 3,248 feet; Phillips and others' No. 1 Weatherly, 25 bbls. at 3,065 feet; Westex Oil Co.'s No. 1 J. A. Whittenburg, 400 bbls. at 2,951 feet.

Gray County

Wilcox Oil & Gas Co.'s No. 2 Worley and Reynolds, 380 bbls. at 2,893 feet.

Wichita County Drilling

Cozy Oil Co.'s No. 10 Warren is on sand at 1,460 feet; No. 12 Warren, on sand at 1,415 feet; Dow and others' No. 1 Willis, drilling at 500 feet; Magnolia Petroleum Co.'s No. 128 Reilly, at 1,080 feet; No. 10 Warren, at 1,525 feet; No. 14 Beach, at 250 feet; Texhoma Oil and Refining Co.'s No. 1-A Beach, at 2,875 feet; Fisher and others' No. 1 Chilson, at 1,500 feet; Maer and others' No. 1 Crudup, 1,400 feet; Simms Oil Co.'s No. 1 Dutton, cementing casing at 1,816 feet; No. 2 Dutton, drilling at 1,150 feet; Stump & Co.'s No. 1 Chilson, at 1,750 feet; No. 2 Dutton, at 1,830 feet; Apple and others' No. 18-A Jennings, at 2,060 feet; Armstrong and others' No. 1 Ethridge, at 1,700 feet; Atlantic Oil Producing Co.'s No. 1-G Waggoner, at 1,300 feet; Boller and others' No. 1 Daume, at 1,600 feet; Brader and others' No. 3 Jennings, at 1,000 feet; Bridwell and others' No. 2 Waggoner, at 1,500 feet; Bullington and others' No. 16 Jennings, at 900 feet; Camp Oil & Gas Co.'s No. 13-B Douglas, at 300 feet; Corkran and others' No. 1 Sheldon, fishing at 1,983 feet; Culberson company's No. 37 Waggoner Brothers, drilling at 1,100 feet; Dale Oil Corp.'s No. 22 Jennings, at 1,500 feet; No. 23 Jennings, at 700 feet; Howell and others' No. 1 Douglas, at 850 feet; Humble Oil & Refining Co.'s No. 1-D Waggoner, at 1,663 feet; No. 2-D Waggoner, at 300 feet; No. 2 Mitchell-Waggoner, at 850 feet; Jones and others' No. 4 Jennings, showing oil at 1,618 feet; Long and others' No. 1 Overby, drilling at 500 feet; Magnolia Petroleum Co.'s No. 70 Honaker, at 1,700 feet; No. 1 Kelly, underreaming; No. 54 Rio Bravo, showing oil at 1,558 feet; No. 11 Watkins, drilling at 1,717 feet; Perkins and others' No. 1 Long, at 800 feet; Petroleum Producers Co.'s No. 2 Allen & Kemp, at 1,400 feet; Ryan Petroleum Co.'s No. 3 Henson, at 400 feet; No. 59 Nance, at 410 feet; No. 60 Nance, at 1,000 feet; Staley and others' No. 4 Hines, at 300 feet; Texhoma Oil & Refining Co.'s No. 3 Mitchell, at 1,700 feet; No. 17 Waggoner Brothers, at 400 feet; White Brothers' No. 2-B Mitchell, at 1,380 feet; United Production Co.'s No. 1 Snow, at 1,600 feet.

Wilbarger County

Atlantic Oil Producing Co.'s No. 4 Sigler-Waggoner, drilling at 2,000 feet; Barkley and others' No. 7-B Stephens, at 900 feet; Bridwell and others' No. 13 Stephens, fishing at 2,100 feet; Burton and others' No. 3 Castlebury, drilling at 600 feet; Humble Oil & Refining Co.'s No. 44 Stephens, at 1,979 feet; No. 45 Stephens, at 1,764 feet; No. 8-H Waggoner, at 1,710 feet; No. 9-H Waggoner, at 1,373 feet; No. 10-H Waggoner, at 384 feet; No. 2-K Waggoner, at 2,242 feet; No. 3-K Waggoner, showing oil at 2,315 feet; No. 4K Waggoner, drilling at 936 feet; No. 6-M Waggoner, at 1,414 feet; No. 5-O Waggoner, at 1,115 feet; No. 6-O Waggoner, at 645 feet; Independent Oil & Gas Co.'s No. 1 Waggoner, at 2,825 feet; McCamey and others' No. 18 Stephens, underreaming; No. 30 Stephens, drilling at 2,100 feet; No. 31 Stephens, setting casing at 2,140 feet; No. 34 Stephens, fishing at 1,185 feet; No. 35 Stephens, drilling at 800 feet; No. 36 Stephens, at 980 feet; Magnolia Petroleum Co.'s No. 21 fee, at 1,650 feet; No. 48 Piper, at 2,000 feet; No. 2 Moore-Waggoner, at 1,150 feet; Milham Corp.'s No. 3-A Waggoner, at 310 feet; No. 3-B Waggoner, at 2,077 feet; No. 1-D Waggoner, setting casing at 2,257 feet; No. 5-H Waggoner, drilling at 2,510 feet; No. 7-H Waggoner, underreaming; No. 1-J Waggoner, drilling at 520 feet; No. 2-L Waggoner, at 1,275 feet; No. 6-L Waggoner, at 600 feet; Miller Oil Co.'s No. 2 Waggoner, at 2,385 feet; Murchison and others' No. 1 Streit, at 230 feet; Petroleum Producers Co.'s No. 3-B Dill, at 1,900 feet; Phillips Petroleum Co.'s (formerly Landreth Production Co.) No. 7-D Waggoner, cleaning out at 2,430 feet; No. 4-G Waggoner, drilling at 1,445 feet; No. 5-G Waggoner, at 2,525 feet; No. 6-G Waggoner, at 1,740 feet; No. 3-I Waggoner, at 2,398 feet; No. 2-Q Waggoner, cementing casing at 2,299 feet; No. 1-T Waggoner, drilling at 621 feet; No. 5-CC Waggoner, showing oil at 1,889

(Continued on Page 149)

NOTED SCIENTISTS GATHER IN TULSA FOR 5-DAYS' SESSION

Over 700 members of the American Chemical Society were present at the opening business session of the society's seventy-first meeting, Tuesday, in the Crystal Ballroom of the Mayo Hotel in Tulsa.

The convention will continue until Friday, with excursions Thursday afternoon and Friday.

A more distinguished body of scientific men has never visited Tulsa than this convention of chemists, some of whom are of international fame. They are members of what is said to be the largest technical organization in the United States.

Meetings preliminary to the general sessions and group sessions were held on Monday.

The convention started in earnest with Tuesday morning's business meeting, at which time 14 world famous chemists were admitted to honorary membership. These were: Prof. Ira Remsen, President Emeritus, and B. N. Baker, Professor Emeritus of Chemistry, Johns Hopkins University; Prof. Theodore W. Richards, Professor of Chemistry, Harvard University; Dr. Edgar Fahe Smith, Provost Emeritus of the University of Pennsylvania and a former president of the society; Prof. W. Lash Miller, head of the Chemical Department, University of Toronto; Prof. Charles Moureu, of the College of France; Prof. Paul Sabatier, of the University of Toulouse, France; Prof. Bohuslav Brauner, of the University of Prague; Dr. Guiseppe Bruni, Professor of Chemistry at the University of Milan; Dr. Ernst Cohen, Professor of Chemistry at the University of Amsterdam; Dr. Frederick G. Donna, Professor of General Chemistry at University College, University of London; Sir James Colquhoun Irvine, Principal and Vice Chancellor, University of St. Andrews, Glasgow; Prof. Joji Sakurai, of the Emperial University of Japan; Prof. Frederick Swarts, Senior Professor of Chemistry of the University of Ghent, Belgium.

A feature of Tuesday's session was the popular address Tuesday evening by A. D. Little, of A. D. Little, Inc., Boston, Mass., on "The Romance of Carbon." Carbon, which bears such an intimate relationship to petroleum, was perhaps first manifested in the charcoal fires of the cave dwellers. The speaker traced its development to that important period when it was used in the smelting of iron and the manufacturer of steel. He told of the 30 years of unsuccessful effort of Dudley, an English iron master, to substitute coal or coke for charcoal in smelting, beginning in the year 1619, and of the later success of Abraham Darby, another Englishman, in 1730. Sir Humphrey Davey, he said, produced the electric arc between two charcoal points in 1821, and the same method, improved, was in general use in electric lighting until the Tungsten lamp succeeded it. In the lessons growing out of the use of carbon during the World War, in which its enormous powers of absorption were demonstrated, Colonel Burrell and others developed the use of these properties of activated charcoal in a process for the extraction of gasoline from natural gas, the absorbed gasoline being recovered by heating the charcoal.

There is still an amazing opportunity for economies in the oil refining industry, the speaker said. For example, the general introduction of modern fractionating equipment and the improved process of lubricating oils. Oil, he said, is the source of numerous alcohols and their derivatives and may soon provide the cheapest base for the synthesis of rubber.

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Deep Sand Gushers Showing Water

Oklahoma's Record Well Made 4,900 Bbls. of Salt Water; Magnolia's Discovery Producer at Wewoka is Affected

By J. L. Dwyer
Staff Correspondent, Oklahoma Fields

The appearance of water in two of the deep sand wells, one in the Garber Field and one at Wewoka, the completion of a large well in the Tulsa-Sapulpa region, and a "blow up" of a showing in a wildcat well, were the most interesting developments of the past week in the Oklahoma fields.

In the Garber Field in Garfield County, the big well of the Sinclair Oil & Gas Co. (No. 27 Hartley) is still making better than 15,000 bbls. of pipe line oil daily, but the salt water has appeared, and on Monday of this week the well flowed 4,900 bbls. of water. The west offset, Sinclair Oil & Gas Co.'s No. 30 Walker, NE cor. NE, Section 13-22-5w, made 2,732 bbls. of oil and 2,800 bbls. of water. Many regard this as indicating that phenomenal production may be expected of a very limited area, probably such as the territory around the previous monarch of Garber, the Sinclair Oil & Gas Co.'s No. 19 Hartley, which was completed last November for 18,000 bbls. daily.

Water appeared in the Magnolia Petroleum Co.'s No. 1 Harjo, NW cor. NW, Section 5-7-8, in the Wewoka Pool, on Monday of this week for the first time. This is the discovery well in the deep sand, and the daily production of 4,390 bbls. was cut 3 per cent.

The production figures for this pool are given elsewhere in this story, and in the opinion of many the intrusion of water in both of these pools is merely a matter of pressure. When the gas pressure is greater than the water pressure, the water is held in check by the gas; but when the gas pressure drops to a lower point than the water pressure the oil is cut.

Water Near Production Limits

It is significant that the appearance of water in the discovery well (which is in the north end of the pool) is close to the limits of production, and gives additional reason for believing that the production may assume a northwest-southeast trend. The wells of the Amerada Petroleum Corp. and the Homa-Okla Co. have been free from water, and many believe that the region southeast of the Homa-Okla lease will be very good.

In the Chicken Farm Pool in Section 6-18-12, Creek County, the Sun Ray Oil Co. and Munn Brothers have a well which started flowing at 125 bbls. an hour from the Hominy sand.

It is No. 2, SW cor. NW SE NW, Section 6-18-12, and the sand was topped at 2,139 feet with some gas. Oil was found at 2,140 feet; the pay at 2,145 feet and the total depth of the well is 2,147 feet. Deep sand development in this section was started by Munn Brothers of Tulsa, and the best well to be completed before the Sun Ray find was that of the Gypsy Oil Co. In No. 13, Section 6-18-12, the Gypsy Oil Co. had a well with an initial production of 1,600 bbls. daily, and today it is making 125 bbls. on the pump. In the opinion of many, this sand is flashy and has a rapid decline.

The Red Bank Oil Co.'s No. 1 Tremain, SE cor. SW NW Section 16-21-2w, which had a showing of oil in sand 4,583-85 feet, made two small flows when the tools were pulled out. This well struck water at 4,588 feet and will be drilled on down deeper. The Bu-Vi-Bar Petroleum Co.'s No. 1 Snyder, NW cor. NW SW, Section 28-21-2w, had a show of oil in sand 4,610-16 feet and then struck water.

In the Deep Rock Pool the Deep Rock Oil Co.'s No. 5 Boyles, NE cor. SW SE, Section 23-18-3, made 35,000,000 feet of gas and 80 bbls. of oil an hour from sand 4,175-4,241 feet.

An unusual performance is recorded northwest of Yale in Pawnee County where the Marland Oil Co.'s No. 1 School Land, SE cor. SW, Section 33-20-5, had the Wilcox sand 3,454-64 feet and made 140 bbls. This well was completed in 1920 with an initial production of 25 bbls. from a total depth of 3,342 feet.

In Okfuskee County, Blakely and others have a well in No. 1 Johnson, NE cor. SE, Section 28-12-10, where the Lyons sand was found 2,940-61 feet and the well made 150 bbls.

The well which the Barnsdall Oil Co. purchased from Keaton & Gold and M. P. Evans of Okmulgee, is making 265 bbls. daily. This well is two weeks old and is No. 1 Morgan, SE cor. SW SE, Section 3-12-11.

In the Fairfax district of Osage County the Sinclair Oil & Gas Co.'s No. 2, NE cor. SE SW, Section 21-25-6, which has 400 feet of oil in the hole from sand 2,690-2,725 feet. This well will be shot.

Wewoka Deep Sand Output

On Monday of this week, the following wells in the Wewoka deep sand area produced as listed:

	Barrels
Homa-Okla Oil Co., No. 1 Carolina	3,850
Magnolia Petroleum Co., No. 1 Harjo	4,390
No. 3 Franz	2,745
Amerada Petroleum Cor., 2 wells	12,710
W. R. Ramsey, No. 4 Amos	3,185
Total	26,870

Seminole County

The following wells in Seminole County produced the daily average listed below for the week ending April 2:

	Barrels
Bryan Bros. and others, No. 1, Sec. 4-7-6	45
Magnolia Petroleum Co., No. 1, Sec. 10-9-5	134
Superior Oil Corp., No. 1, Sec. 15-9-6	33
I. T. I. Oil Co., No. 1, Sec. 24-9-6	1,080

Deep Rock Pool

Daily average production in the Deep Rock Pool in Payne County for the week ending April 2 was:

Company—	Wells	Prod.
Deep Rock Oil Co.	13	1,485
Shaffer Oil Co.	1	888
Pure Oil Co.	1	173
J. A. Hull Co.	1	633
Amerada Pet. Co.	4	535
Mulberry Oil Co.	3	768
Total	23	4,482

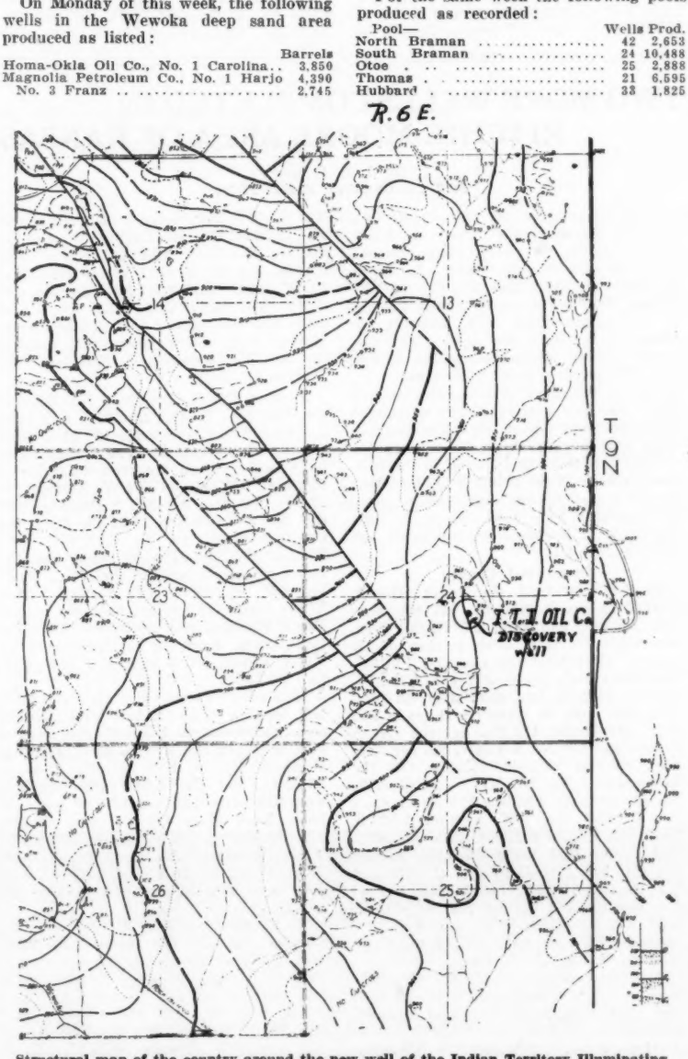
Ingalls Pool

The daily average production of the Ingalls Pool in Payne County for the week ending April 2 was:

Company—	Wells	Prod.
Olean Petroleum Co. Prairie	3	4,519
Roxana Petroleum Corp.	1	2,219
Total	4	6,738

For the same week the following pools produced as recorded:

Pool—	Wells	Prod.
North Braman	42	2,653
South Braman	24	10,488
Otoe	25	2,888
Thomas	21	6,595
Hubbard	33	1,825



Structural map of the country around the new well of the Indian Territory Illuminating Oil Co. in Section 24-9-6, Seminole County, Oklahoma. (Through the courtesy of the Indian Territory Illuminating Oil Co.)

Wewoka (shallow)	141	6,944
Weleetka	49	1,525
Yeager	49	1,247
Holdenville	9	105

Other Pools' Production

Following was the average daily production in several important pools for the week ending April 1:

Tonkawa Field

Amerada Petroleum Co.	38	2,074
Blackwell Oil & Gas Co.	31	722
Carter Oil Co.	4	97
Champlin Refining Co.	2	16
Comar Oil Co.	366	16,594
Mid-Continent Oil Co. and Marland Oil Co.	21	2,034
Gypsy Oil Co.	110	4,235
Healdton Oil & Gas Co.	26	489
Wentz Oil Corp.	50	8,977
McMan Oil Corp.	2	14
Pennok Oil Co.	32	758
Phillips Petroleum Co.	3	48
Prairie Oil & Gas Co.	12	313
Sinclair Oil & Gas Co.	1	7
T. B. Slick and Comar Oil	38	1,819
Southwestern Petroleum Co.	15	308
The Texas Company	12	1,421
White Eagle Oil & Ref. Co.	7	12
Total	770	40,928

Tonkawa Deep Sand

Amerada Petroleum Co.	8	1,481
Pennok Oil Co.	7	276
Comar Oil Co.	52	10,949
Gypsy Oil Co.	17	2,083
T. B. Slick	7	1,147
McMan Oil Co.	1	4
Blackwell Oil & Gas Co.	4	229
Wentz Oil Co.	16	8,250
The Texas Company	11	1,401
Phillips Petroleum Co.	1	26
Mid-Continent and Marland Oil Co.	5	2,543
Total	129	28,389

Total Tonkawa deep sand to date, 29,875,341 bbls.

Davenport Pool

Magnolia Petroleum Co.	52	3,995
Gypsy Oil Co.	17	3,915
Phillips Petroleum Co.	3	520
Pure Oil Co.	6	266
Selby Oil and Southwestern Petroleum Co.	14	1,375
Carter Oil Co.	7	282
Skelly Oil Co.	8	920
The Texas Co.	18	4,611
The Twin States Oil Co.	8	363
Sinclair Oil & Gas Co.	1	50
Amerada Petroleum Corp.	10	1,395
Shaffer Oil & Ref. Co.	3	122
Prairie Oil & Gas Co.	20	1,825
Total	167	19,628

Cromwell

Amerada Petroleum Co.	8	361
Berry Petroleum Co.	1	30
Burk-Greis	4	247
Carter Oil Co.	56	2,465
Central National Oil Co.	8	431
Continental Oil Co.	11	1,176
Mid-Continent Petroleum Corp.	39	902
Empire Gas & Fuel Co.	3	159
Gilliland Oil Co.	4	90
Gypsy Oil Co.	42	2,896
Gypsy Oil and Laurel Co.	11	391
Devonian Oil Co.	1	140
Houston Oil Co.	4	469
Independent Oil & Gas Co.	3	18
Kingwood Oil and Sinclair Oil & Gas Co.	4	76
Laurel Oil & Gas Co.	2	50
McMan Oil Co.	13	581
Magnolia Petroleum Co. and McMan Oil Co.	4	230
Mid-Kans Oil & Gas Co.	7	317
Magnolia Petroleum Co.	4	90
Prairie Oil & Gas Co.	14	719
Pure Oil Co.	10	183
Roxana Petroleum Co.	22	854
Shaffer Oil & Gas Co.	8	338
Sinclair Oil & Gas Co.	31	2,048
Snowden & McSweeney	4	310
Sinclair Oil & Gas Co. and Houston Oil Co.	5	117
Southwestern Petroleum Co.	19	1,028
Sinclair Oil Co. and Transcontinental	8	447
Superior Oil Co.	6	108
Tidal-Carter	2	115
Tidal-Osage Oil Co.	11	432
Barnsdall Oil Co.	11	271
White Eagle Oil & Ref. Co.	2	15
Nowata Oil & Refining Co.	3	120
Phillips Petroleum Co.	1	60
Total	386	18,284

Osage County

Washashe Oil Co. has a machine in for No. 52, SW cor. SW, Section 15-29-9. Winona Oil Co. is drilling at 670 feet in No. 1, C NW SE, Section 28-29-9. Keener Oil & Gas Co. has a machine in for No. 9, CSL SW NE, Section 15-29-10. Indian Territory Illuminating Oil Co. has completed No. 24, SW cor. NE SE, Section 15-29-10. Sand was 1,001-23 feet, and the well is making 5 bbls. after a shot of 100 quarts; No. 1, SE cor. SE, Section 25-29-10, is drilling at 950 feet. Beacon Oil Co. is drilling at 420 feet in No. 13, CEL SE SE, Section 27-29-11. Wiser Oil Co. has completed No. 15, C NE NW, Section 27-

29-11. Sand was 950-94 feet, the well was shot with 100 quarts and is making 5 bbls. Owen-Osage Co. has a dry hole at 1,894 feet in No. 360, CNL NE SE, Section 26-28-11. Washashe Oil Co. has a machine in for No. 2, SE cor. NW, Section 33-28-11. Kanupp and others have moved in a machine for No. 1, NE cor. NW NE, Section 20-26-12. Skelton and Moore have rigged up No. 9, SW cor. NW SE, Section 32-26-12. Sun Ray Oil Co. and Reese have a failure in No. 1, NE cor. SE, Section 5-20-8, which is abandoned at 3,040 feet.

Sand Springs Home has a dry hole in No. 1, SE cor. NW NE, Section 11-22-12, which is abandoned at 1,670 feet. Middleton Oil Co.'s No. 1, NE cor. SE, Section 5-2-14, is dry and abandoned at 1,580 feet. Tidal Oil Co.'s No. 4-A Collins, CSL NE SW, Section 31-21-3, is drilling at 275 feet.

Lewis Oil Co. has completed No. 7, SW cor. NE NW, Section 29-25-8. Sand was 2,485-2,509 feet and the well was shot with 10 quarts and made 110 bbls. The Texas Company's No. 6, CNL NW SE, Section 29-25-8, made 50 bbls. after being shot with 5 and with 10 quarts in sand 2,470-92 feet. Tidal-Osage Oil Co. has the rig up for No. 5, NW cor. SE SW, Section 24-24-8. Peters Petroleum Co. has spudded No. 5, CWL NW, Section 32-24-9. Harland Oil Co. has a machine in for No. 82, NW cor. SE SW, Section 19-25-11. Aurther Oil Co. is drilling at 1,200 feet in No. 24, NE cor. NW SE, Section 5-25-12. Barnsdall Oil Co. has a machine in for No. 6, SW cor. NW, Section 11-24-11. Peters Petroleum Co.'s No. 8, SW cor. NE SE, Section 12-23-8, had sand 2,077-2,156 feet and made 25 bbls. after a shot of 150 quarts. Mid-Kansas Oil Co. has a rig on the ground for No. 1-A, SW cor. SW, Section 36-22-8. Sterling Oil & Gas Co. is drilling at 450 feet in No. 6, SW cor. SE, Section 1-22-9. Owen-Osage Oil Co. is drilling at 300 feet in No. 364, SE cor. SW SE, Section 2-23-11. Kewanee Oil Co. has completed No. 1, NE cor. SW, Section 4-22-11, for 20 bbls. in sand 1,652-1,700 feet. It was shot with 60 quarts; the machine is in for No. 12, CEL NE NE, Section 5-22-11.

Phillips Petroleum Co.'s No. 8, SE cor. SE, Section 10-21-9, had sand 2,255-69 feet and made 30 bbls. after a shot of 20 quarts. Franchot & Moore have a machine in for No. 7, CSL SW SW, Section 11-21-9. Swoverland and others are drilling at 1,050 feet in No. 3, CWL SW SW, Section 19-21-10. T. K. Smith is rigging up No. 1, CNL NW, Section 33-21-10. Echo Oil Co. has completed a gas well in No. 1, NE cor. SE, Section 29-20-10. Sand was 2,155-60 feet and the well made 23,000,000 feet of gas. Grimes & Gillespie are drilling at 650 feet in No. 1, CEL SE NW, Section 4-20-11. Winona Oil Co. has the rig up for No. 5, CSL SE NE, Section 29-20-12.

Lincoln County

H. F. Wilcox Oil & Gas Co. has spudded No. 2, CNL NW NW SE, Section 5-12-3.

In the Davenport area, the Magnolia Petroleum Co.'s No. 4, SW cor. NE SE, Section 34-15-5, is spudded, and so is No. 8, NW cor. SE SE, Section 34-15-5. Phillips Petroleum Co. has abandoned the location for No. 1, SE cor. NE, Section 35-15-5. Carter Oil Co.'s No. 3, SW cor. SE SE, Section 6-15-6, is swabbing 40 bbls. from sand found at 4,068-70 feet. Magnolia Petroleum Co. has a rig on the ground for No. 1 Kilgore, NW cor. NE SW, Section 8-15-6. Mid-Continent Petroleum Corp. has rigged up No. 5 Earp, SE cor. SW NW, Section 8-15-6.

Skelly Oil Co.'s No. 8, NW cor. SE NE, Section 2-14-5, had sand 3,335-82 feet, and made 120 bbls. naturally. The Texas Company's No. 8, SE cor. SW SE, Section 2-14-5, had sand 3,396-3,451 feet, and made 725 bbls. naturally. It was shot with 90 quarts and made 700 bbls. after the shot. Amerada Petroleum Corp.'s No. 7, SW cor. NE SW, Section 3-14-5, had sand 3,430-54 feet, and made 24 bbls. after a shot of 80 quarts.

Noble County

In the Tonkawa Field, the Marland Oil Co. and others have built the rig for No. 12 School Land, NE cor. SW SE, Section 16-24-1w.

Magnolia Petroleum Co. has a rig on the ground for No. 1 Freeman, NE cor. SW SW, Section 16-21-2w.

Kay County

Marland Oil Co. has a rig up for No. 8 Thomas, CNL NE SW SW, Section 15-25-2w. Twin State Oil Co.'s No. 5, NW cor. SW NW, Section 22-25-2w, is dry and abandoned at 3,671 feet.

Payne County

In the Deep Rock Pool, the Mulberry Oil Co.'s No. 3, SW cor. NE SE, Section 23-18-3, had sand 4,282-87 feet, and made 800 bbls. the first day. Empire Gas & Fuel Co. is drilling at 1,675 feet in No. 1, NW cor. SW NW, Section 26-18-3. Shaffer Oil & Refining Co.'s No. 3, NE cor. NW NE, Section 26-18-3, is drilling at 3,635 feet.

In the northwest part of the county the Tidal-Osage Oil Co. has rigged up No. 1, SE cor. SW, Section 12-19-1w. Bryan & Emery are drilling by a bit, in No. 1, C NW SE, Section 33-19-1w, at 315 feet.

Pawnee County

Wood and others have spudded No. 1, SE cor. SW, Section 25-21-6.

Stephens County

The Carter Oil Co.'s No. 2, SE cor. SW NE, Section 2-2-5w, had sand 1,499-1,505 feet, and is pumping 60 bbls. McPhail and Benkley have spudded No. 1, NW cor. SW NE, Section 10-2-4w. Flowers and Frazier are drilling at 750 feet in No. 1, NE cor. NE, Section 25-2-9w. Continental Oil Co.'s No. 1 Price, NW cor. SE, Section 30-2-9w, is drilling at 2,150 feet. Magnolia Petroleum Co.'s No. 1, NE cor. SW, Section 20-2-9w, had sand 2,188-90 feet, and flowed 140 bbls. the first 17 hours. It will be tubed. Westheimer and Daube have a dry hole at 2,380 feet in No. 2, SE cor. NW SE, Section 30-2-9w. Magnolia Petroleum Co. has abandoned the location for No. 11, SE cor. SW NE, Section 25-1-9w.

Green and others' No. 1, CNL NE NW SW, Section 24-2-10w, had sand 1,575-79 feet, and makes a small flow every 2 hours. The hole stands full of oil. Magnolia Petroleum Co.'s No. 1, NE cor. NE, Section 36-2-10w, had sand 1,638-42 feet, and pumped 180 bbls. the first 24 hours.

Magnolia Petroleum Co. has a rotary rig up for No. 2 Harris, NW cor. NE NW, Section 3-2s-5w, and has cemented the surface casing in No. 1, NE cor. NW, Section 21-2s-7w; No. 5, C south half SE SE, Section 25-1s-9w, had sand 1,963-80 feet, and is estimated at 10 bbls.; No. 11 Edwards, CSL NW SE NW, Section 20-1s-9w, is drilling at 650 feet and the rig is up for No. 8 Brittan, SE cor.. NW SW, Section 30-1s-9w. Safety First Oil Co. has a dry hole in No. 7, CWL NE SW, Section 20-1s-8w, at 2,320 feet.

Lone Star Oil Co. is drilling at 2,417 feet in No. 8 Brown, NE cor. SE NE, Section 30-1s-8w. Empire Gas & Fuel Co.'s No. 5, CSL SE SE NW, Section 32-1s-8w, had sand 1,977-86 feet, and is pumping 40 bbls. an hour. Brannon and others' No. 3, CWL NW NW NW, Section 35-1s-8w, is drilling at 250 feet.

Skelly Oil Co.'s No. 1, SW cor. SE, Section 34-1s-5w, had sand 1,559-68 feet, and made 1,000,000 feet of gas and sprayed 20 bbls. of oil.

Carter County

Gilmer Oil Co. has a rotary rig up for No. 2 Heinstadt, SE cor. SW NE, Section 34-1s-3w. Magnolia Petroleum Co.'s No. 2, NE cor. NW SE, Section 34-1s-3w, had sand 3,164-72 feet, and swabbed 67 bbls. Roxana Petroleum Corp.'s No. 2, NW cor. SE SE, Section 7-2s-2w, had a total depth of 2,287 feet, and ripped casing at 1,875 feet, and 1,932 feet, and the well swabbed 132 bbls. the first day. It is now making 30 bbls. on the pump. Magnolia Petroleum Co.'s No. 1, SW cor. NW SW, Section 15-2s-2w, had broken sand 1,078-1,151 feet, and is making 100 bbls. daily on the pump; the rig is being moved in for No. 1 Cox, NW cor. NW, Section 22-2s-2w. Merrick and others have a rig up for No. 2, NW cor. NE, Section 27-2s-2w.

The Atlantic Oil Producing Co.'s No. 3, C S half SW NW, Section 5-3s-2w, had broken sands 2,888-3,329 feet and pumped 20 bbls. Humble Oil Co.'s No. 20, C S half SW SW, Section 9-4s-2w, pumped 15 bbls. from sand 2,120-45 feet. Simpson Fell Oil Co. has a dry hole at 2,830 feet in No. 3, NW cor. SE NE, Section 9-4s-2w.

In the Brock Pool the Amerada Petroleum Corp. has completed No. 16, CEL NE SW, Section 28-5s-1. Sand was 1,202-22 feet and the well is pumping 60 bbls.

Garfield County

In the Garber Field, the Sinclair Oil & Gas Co. has built the rig for No. 1 Walker, SE cor. NE, Section 13-22-4w; and No. 40, NE cor. SE NE, Section 13-22-4w, is spudded. Marland Oil Co. and Mid-Continent Petroleum Corp. have rigged up to deepen an old well in No. 46 School Land, NE cor. SE SE, Section 13-22-4w, and the rig is built for No. 45 School Land, C NE SE, Section 13-22-4w, the rig is on the ground for No. 65 School Land, SW cor. NE SE, Section 13-22-4w. Sinclair Oil & Gas Co. has built the rig for No. 2 Hartley, SW cor. NW, Section 18-22-3w. This is an old well which will be drilled deeper; No. 29 Hartley, SW cor. NW NW, Section 18-22-3w, is drilling at 1,427 feet; No. 30 Hartley, SW cor. NW NW, Section 18-22-3w, is drilling at 1,050 feet; and the rig is built for No. 33 Hartley, CSL SW SW NW, Section 18-22-3w. Roxana Petroleum Corp. is drilling at 950 feet in No. 2-L, NW cor. SW SW, Section 18-22-3w; and No. 3-L Schroeder, SE cor. SW SW, Section 18-22-3w, is rigged up; No. 4-H Schroeder, SW cor. SW, Section 18-22-3w, is rigged up; and No. 12-W Schroeder, SW cor. NE SW, Section 18-22-3w, had sand 3,250-3,350 feet, and made 400 bbls. after a shot; No. 8-L Schroeder, NE cor. NW SW, Section 18-22-3w, is spudded; and the rig is built for No. 26 Kisner, NE cor. NW NW, Section 19-22-3w.

Seminole County

Independent Oil & Gas Co. has a rig on the ground for No. 1, SW cor. NE SE, Section 7-9-8. Independent Oil & Gas Co. and Holm & Jarvis are drilling at 450 feet in No. 2, SW cor. NW, Section 8-9-8. Shaffer Oil & Refining Co. has spudded No. 3, SW cor. NE NE, Section 18-9-8. Southwestern Petroleum Co.'s No. 2, NW cor. SE NE, Section 18-9-8, is drilling at 650 feet. Magnolia Petroleum Co.'s No. 1, SW cor. SE SW, Section 14-8-7, had sand 3,239-46 feet, and is flowing 196 bbls. daily. T. B. Slick's No. 2, SE cor. SW SW, Section 14-8-7, had sand 3,210-38 feet, and is making 50 bbls. on the pump.

Empire Gas & Fuel Co. has moved in a rig for No. 1 Litka, SW cor. SW, Section 3-7-6. In the Wewoka deep sand area, the Magnolia Petroleum Co. has built a rig for No. 2 Hawkins, SE cor. SW NE, Section 6-7-8. In the south end of the county, the American Oil & Refining Co.'s No. 1, NW cor. SE, Section 34-5-6, had sand 1,667-75 feet, and made 20 bbls. naturally; No. 1 Mosely, NW cor. NE NE, Section 9-4-6, is being rigged up.

Pottawatomie County

Magnolia Petroleum Co.'s No. 1, NE cor. SE SE, Section 13-7-4, had lime pay 4,062-4,135 feet, and is swabbing 10 bbls. daily.

Hughes County

Magnolia Petroleum Co. has rigged up No. 1 King, SW cor. NW, Section 18-9-9. Independent Oil & Gas Co. is rigging up to deepen an old well in No. 1, SE cor. NW NW, Section 14-8-9; and

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TWO MORE WELLS COMPLETED IN RITCHIE-MOORE AREA OF KANSAS

By J. L. Dwyer
Staff Correspondent, Kansas Fields

With the exception of two completions in the Ritchie-Moore area of Lyon County, there was very little unusual news in Kansas last week. In Lyon County, the McCulloch Oil Co. of Okmulgee, Okla., has another well on top of the sand which will probably be drilled in within a few days. The discovery well in this section is No. 1, SW cor. NW, Section 16-21-10, and was completed in December of last year for 110 bbls. The low gravity of the oil caused some hesitancy about pipe line connections, and the McCulloch Co. constructed its own line and piped the oil to the railroad, where it is being sold for fuel. Should a pool of any size develop, there will probably be a good market for this grade of oil, as most of the roads are burning fuel oil.

Greenwood County

In the Scott Pool, the Empire Gas & Fuel Co.'s No. 9, NE cor. SW SE, Section 24-23-8, had sand 2,577-2,601 feet, and made 50 bbls. after a shot of 60 quarts. Greenland Oil Co. and Phillips Petroleum Co.'s No. 8, SW cor. NE SW, Section 25-23-8, had sand 2,502-43 feet, was shot with 60 quarts and made 150 bbls. Manhattan Oil Co. has the rig on the ground for No. 9 Craft, SE cor. NE SW, Section 25-23-8. Mission Oil Co. has spudded No. 10, NE cor. SW NW, Section 25-23-8. Phillips Petroleum Co.'s No. 5, SW cor. SW, Section 15-23-9, had sand 2,337-2,402 feet, was shot with 140 quarts and made 35 bbls. Skelly Oil Co. has rigged up No. 2, NE cor. NE, Section 15-23-9. Empire Gas & Fuel Co. has the rig up for No. 34 C east half SW, Section 16-23-9, and No. 4 Morris, NE cor. SW NE, Section 19-23-9, is drilling at 775 feet.

Day and others' No. 1, SE cor. SW, Section 1-22-10, had sand 1,975-99 feet, was shot with 240 quarts and swabbed 1,000 bbls. the first day. Empire Gas & Fuel Co.'s No. 5, NE cor. SW SW, Section 6-22-10, is drilling at 475 feet. Hazlett and others have completed No. 12, NE cor. SW NE, Section 12-22-10. Sand was 2,031-2,111 feet, and the well is making 250 bbls. after a shot of 320 quarts. Davis, Hazlett and others' No. 13, C south half SW NE, Section 12-22-10, had sand 2,044-2,127 feet, and made 550 bbls. after a shot of 200 quarts. Hazlett and others have built the rig for No. 15 DeMalhourie, NW cor. SE, Section 12-22-10.

Sinclair Oil & Gas Co.'s No. 37, SE cor. NE SW, Section 20-22-10, had sand 2,288-2,343 feet, and made 150 bbls. after a shot of 30 quarts. The Texas Company has a rig on the ground for No. 6 Prather, NW cor. SW SW, Section 20-22-10; and also for No. 8 Prather, SW cor. NE SW, Section 29-22-10. Tidal Oil Co. has rigged up No. 3, CWL NW, Section 29-22-10. Prairie Oil & Gas Co. has a rig on the ground for No. 2 Hartley, SW cor. NW NE, Section 1-23-9. White Eagle Oil Co. has built the rig for No. 1 Hartley, NW cor. SW NW, Section 1-23-9. Pure Oil Co. has rigged up No. 7 Mason, CWL west half NW, Section 26-23-10.

Mississippi Valley Oil Co.'s No. 5 CEL NE, Section 27-23-10, had sand 2,305-33 feet, and made 40 bbls. after a shot of 40 quarts. In the Fromm Pool, Jennings Brothers' No. 8, SW cor. SE, Section 33-22-11, had sand 1,822-1,925 feet, and was shot with 125 quarts and made 50 bbls. York State Oil Co. has spudded No. 8, SE cor. NW, Section 33-22-11. T. K. Simmons' No. 2, NE cor. NW, Section 4-22-12, had sand 1,838-85 feet, and made 225 bbls. after a shot of 220 quarts.

T. K. Simmons' No. 3, SW cor. NE, Section 4-22-12, had sand 1,867-1,922 feet, and was shot with 200 quarts and made 200 bbls. Phillips Petroleum Co. has the rig on the ground for No. 1 Jones, SW cor. NW SW, Section 5-22-12. Skelly Oil Co. has spudded No. 1, NE cor. NW, Section 4-23-11. T. K. Simmons has a rig on the ground for

(Continued on Page 124)

Clark Bros. Co. OLEAN, N.Y.

Convention:

"How are they going to get water to drill those wells in West Texas?" asked one oil man of another in discussing the large amount of drilling in prospect as a result of recent wildcat completions.

"They'll use CLARK ENGINES," replied the other. "They're ideal."*

*This conversation was overheard between two geologists at the recent convention held at Dallas.

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S ENGINES

New Wells Help Define Cole Gas Field

Completion Gives Operators Hope Oil and Gas Area is More Clearly Outlined. Piedras Pintas Dome Interesting

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., April 5.—Two wells making gas and one with gas wet with oil were completed the past week in the Cole Gas Field in Duval County, where Cin-Tex Petroleum Co. a few weeks ago brought in an oil well. These and the starting of two new wildcat tests, one 1½ miles and the other 2½ miles east of the Cin-Tex well were the features of the week past in that part of Duval County.

In the Piedras Pintas Salt Dome Field, at Noleda in Duval County, 25 miles northeast of the Cole Gas Field, Moody-Seagraves and William F. Morgan were setting liner and getting ready to bail Saturday, in a 22-foot sand that looked promising. The well offsets the Humble discovery well to the west, and the Humble's No. 5 Walsh, 450 feet southeast of the discovery well was in a sticky gumbo at 3,660 feet, similar to the gumbo found above the pay in the discovery well. Total depth of discovery well is 3,623 feet. No. 5 is down the dip, presumably.

In the Cole Gas Field, the Humphrey-Moody-Seagraves' well on Block 5 of Section 10, located a mile northeast of the Cin-Tex discovery oil well came in April 1, estimated to be making 35,000,000 feet of gas and a little oil. It gave the oil interests hope that it marked the dividing line between the gas on the west and the oil on the east in that part of the field to the north and is the first well that far north showing any oil. It is 150 feet northwest of the center of the southeast line of Block 5, of Section 10, which makes it 660 feet from the northeast line. The next location will be 150 feet from the northeast and southeast lines and offsetting acreage outside of the Cole block. The Cole Petroleum Co.'s No. 15, on Block 8, of Section 16, a mile to the southwest came in the day before and was estimated at 50,000,000 feet of dry gas. Last Friday, O. W. Killam brought in the No. 5 on Block 8, of Section 10, off to the northwest of the Cin-Tex oil well and back in the gas area. It is estimated at 35,000,000 feet of dry gas. All of the wells were between 1,700 and 1,800 feet total depth.

Nearing Completion

Both the Cin-Tex Petroleum Co. and the Houston Oil Co. will have wells ready to bring in this week, the Cin-Tex having set casing in its No. 3 and Houston Oil Co. has its Nos. 2 and 3 about ready to bring in. They are grouped somewhat to the east of the discovery well and are expected to be oil wells. Cole Petroleum Co.'s No. 17 on Block 13 of Section 11, to the south of the Cin-Tex discovery well which came in flowing oil and 10 days ago made a big head of oil and then went to making gas is still a gas well spraying oil. It is turned on each day open flow in hope that it will come back to oil. There is a theory that it has bridged over the oil at the bottom of the hole. Cole Petroleum's No. 9 is a direct offset to the southwest 300 feet from the Cin-Tex discovery well. It will be one of the next wells in.

Gibson Oil Corp. is about ready to spud in in the center of the SE half of the SE half of Survey 353, 1½ miles east of the Cin-Tex oil well, and George M. Ball has a rig on the track at Bruni ready to move to a location about the center of Survey 463, which is 2½ miles to the east of the Cin-Tex well. Off to the southeast the acreage is all under the control of the Cole Petroleum Co. and the Houston Oil Co. and their further drilling is expected to move into this unproven acreage.

In the Piedras Pintas salt dome area, as noted above, Moody-Seagraves and William F. Morgan were setting liner and expected to bail Saturday and bring in their offset to the west of the discovery well, No. 4 Walsh, of the Humble, and Humble's No. 5 was drilling in sticky gumbo at 3,660 feet. The three other tests under way on what is supposed to be the salt dome are J. K. Hughes drilling at 3,305 feet in No. 1 Peters in the southwest corner of Survey 12, and located 1,800 feet north of the discovery well. Grayburg was drilling at 3,309 feet in No. 1 Halff about three-quarters of a mile north of the discovery well, and Magnolia was fishing at 2,610 feet in No. 1 Speer, located about 2,000 feet to the northwest of the discovery well, and in Survey 185.

In the district, but outside of the Piedras Pintas salt dome boundaries, the Humble was coring a sand at 2,800 feet in No. 4 Schallert on the Palangano salt dome where it recently discovered that it was off the salt plug and changed to 112-foot derrick. Simms Oil Co. on the north slope of the Palangano salt dome has spudded No. 1 Schallert on Survey 241, and made 50 feet and shut down for water. Graham, in the northeast corner of the county, is drilling at 1,270 feet in No. 1 Beall. Humble's No. 1 Hagrist, in the northern edge of Duval County, has been abandoned at 2,327 feet with a showing of oil in five feet of sand which also made fresh water. It is moving to a new location. This is the fourth test in the district, some of the tests being above the line in McMullen County and all got a little showing of oil.

Wildcat Completions

During the past week, Murchison and Fain abandoned No. 1 Burdette in Caldwell County, a few miles northeast of the Luling Field at a depth of 2,451 feet, and in the top of the Edwards and dry. They will move to a new location south of Dale and several miles farther northeast from their Burdette Townsite well. Humble Oil & Refining Co. has abandoned its last test on the Voelker tract and the fourth in the northeastern corner of Travis County, where it has been finding evidences of a serpentine plug with some slight showings of oil. The first test on the Giese farm was made last year, and got 35 feet of serpentine. The other three have all been made this year. In that district and a little to the south of the Humble tests, Gulf Production Co. last week spudded in its No. 1 Parsons, on a block of leases it has held for some time.

In Edwards County, X. K. Stout got salt water at 2,500 feet in the first test on the Peterson ranch and is shut down and is to move to a new location. Mission Oil Co. in western central McMullen County, abandoned its No. 1 Washburn at 3,013 feet and the rig is stacked at Fowlerton to be moved out of the field.

Webb County

In the Aviator or Edgington Pool district in the Mirando Field in Webb County Three Rivers Oil Co. is swabbing 400 bbls. daily from the No. 3 on the southern edge of Block 75 of the Edgington district, the first completion since the purchase of the block of Dr. A. L. Edgington and is starting No. 4 in the southeast corner of the tract, 150 feet each way from the lines and an offset to the Gibson Oil Corp.'s No. 2 which is preparing to drill in the northwest corner of Block 13 of the Bruni tract. Gibson Oil Corp. is rigging up No. 1 Bruni in the southwest corner of Block 13 on a north offset to the Neal, Lane & Ramsland test in the northwest corner of Block 18, completed last week, which extends the Edgington Pool a half mile south. Since the completion of the Neal, Lane & Ramsland initial test on the block, Simms Oil Co. has paid $20,000 for a working half interest in the lease of a little over 100 acres and the one well completed which has been swabbing 250 bbls. daily. Crown Central Corp. is starting an offset to the Neal and others well on the west in the northeast corner of Block 17 and Rydal-Crown Central are starting a test in the southeast corner of Block 16, a diagonal offset to the Neal and others well and offsetting Gibson on the west and Crown Central on the south.

Simms Oil Co. the past week acquired 490 acres from Kirkpatrick and others, a little to the west, of which 390 acres were out of survey 835 of the Bruni land and included two gas wells completed within recent months and 100 acres out of survey 17, for which it paid $33,000 cash and $54,000 to be paid in oil. The land is a little to the southwest of the Edgington Pool.

In the Carolina-Texas district of Webb County, Associated company's No. 3 Webster on survey 684 which tested out a small gasser at 2,102 to 2,110 feet is drilling out the liner. Total depth of hole 2,135 feet. United States Gas & Oil Co.'s No. 1 Benavides on survey 679 is standing at 2,100 feet waiting for water. Moody-Seagraves and Morgan on Block 61 of survey 261 have taken a good core at 2,609 feet and setting casing. The well promises to extend the gas field a half mile to the northwest. Snowden & McSweeney's No. 2 de la Garza in Section 682 set 8¼-inch casing at 2,094 feet. Morgan Oil Co.'s test on survey 335 is standing at 2,250 feet. Roark and others on Block 11 or survey 335 tested salt water at 2,612 to 2,619 feet and is standing. J. H. Winch is moving in on Block 12 of survey 336. Ritchison and others' No. 1 Billings has resumed drilling and is at 1,360 feet. J. H. Winch's No. 1 Billings has been abandoned at 2,818 feet. J. H. Binney's No. 5 Bruni on Block 60 of the Albercas grant has taken a core at 2,365 feet. J. C. Hale has a derrick up on survey 51.

Zapata County

The Texas Company is testing No. 2 Jennings with casing set at 3,804 feet. Cullinan & Clark have a derrick up for a test on Block 9 of survey 10 in Zapata County,. 607 feet from the west line and 317 feet from the north line. Hill & Perkins are drilling at 1,500 feet in No. 1 Yeager-Stroham on survey 258, the location being 1,064 feet from the west line and 1,720 feet from the south line.

Jim Hogg County

Moody-Seagraves (Houston Gulf Gas Co.) are starting two new tests in the Randodo district where they have just completed their No. 1 well, the third producer in the new field, 7 miles south of the Henne, Winch & Fariss Pool. One of the new tests is on Block 11, survey 291, 150 feet from the north and west lines and is drilling at about 600 feet and the other is on Block 20 of survey 291, 150 feet from the north and east lines and is spudding in. Several additional locations have been made on the block of leases the company recently bought from O'Byrne and others. Simms Oil Co. has additional locations, having drilled one gasser in the field last year. Simms Oil Co.-E. L. Smith Oil Co.'s No. 1 on survey 233, a couple of miles to the southeast, is drilling at 2,914 feet. Murchison & Fain are moving in on survey 452 for a test on the Yeager block in Jim Hogg and several miles south of the Cole gas field. O. W. Killam is coring at 3,208 feet in the test on Block 1 of survey 2 of the Holbein land. Simms Oil Co.'s No. 1 Jones is drilling at 2,918 feet on Block 52 of the Oscar Thompson ranch. Pittsburgh Oil Development Co. has been drilling a week in the first test on the Wilbur Allen ranch and National Oil Co. has the derrick up for its first test on Block 3 of survey 23 of the same ranch.

O. W. Killam is drilling at 200 feet in No. 1 Hinnant on Block 5 of survey 255. Magnolia has abandoned its No. 1 Martinez on Block 10 or survey 256 in the Henne, Winch & Fariss Pool at 2,085 feet and Rydal-Rycade Corp. have abandoned at 2,175 feet their No. 3 Vela on Block 1, survey 1.

In the Cole gas field in Webb and Duval Counties Cole Petroleum Co.'s No. 10 Benavides on Block 5 of Section 3 in Webb is being abandoned at 2,699 feet. It tested salt water at 2,693 feet. The company plans skidding the rig to a new location. The company's No. 15 the past week was brought in good for about 35,000,000 feet of gas. No. 16 on Block 10 of Section 16 in Duval County is rigging up. It is a little east of the No. 15 gasser and stands a chance of making an oil well. No. 18 on Block 13, Section 11, is rigging up. It is a little south of the Cin-Tex oil well and is nearly an offset. Derrick is up for No. 20 Benavides of Cole Petroleum Co. on Block 8 of Section 10, northwest of the Cin-Tex well.

Houston Oil Co. has casing set and is nearly ready to drill in its No. 2, an offset to Cin-Tex No. 2, with casing set at 1,791 feet. No. 3 Benavides has casing set at 1,785 feet and is an offset to the Cin-Tex No. 3. All three are on the southeast one-half of Block 16, Section 10. The same company's No. 4 is drilling at 400 feet in Block 15 of Section 10, next to the northeast and is 150 feet from the northeast line and 510 feet from the northwest line. Cin-Tex Co.'s No. 3 has casing set and is ready to drill on at 1,787 feet in its No. 3. True White has timber on the ground for a derrick on Block 4 of Section 15, a mile south of the Cin-Tex well.

Barkley & Meadows have entered the Cole gas field and in company with William F. Morgan are rigging up on one location and have three other locations made on Block 4 of Section 10 which is northwest of the gasser spraying oil, just completed by Col. A. E. Humphreys and Moody-Seagraves on Block 5 of Section 10. Humphreys and Moody-Seagraves are moving in for their No. 3 in the east corner of Block 5, Section 10, and 150 feet from the northeast and southeast lines. Sun Oil Co. has spudded in its test on Block 15 of Section 11, which offsets a gasser and is a half mile southwest of the Cin-Tex discovery well.

O'Hern & Putnam are starting a wildcat test 2 miles east of Bruni where they have a big block. The location is a few miles south of the Cole gas field.

Caldwell County

Reiter-Foster Oil Corp. is preparing to drill on the O. S. Alexander tract in Caldwell County, 2 or 3 miles west of its recently abandoned test on the Brown tract where it got a little oil in about 100 feet of serpentine formation. Marland Oil Co. has given some of the acreage for a test. A location is now being made. Sun Oil Co.'s No. 1 J. M. Cardwell, a few miles north of Lockhart in Caldwell, topped the Edwards at 1,497 feet and is drilling below 1,557 feet. It blew out a boiler plug at the last depth and was shut down for a day. Reiter-Foster is rigging up on the J. W. Gommillion north of the Lytton Springs Field.

Live Oak County

Glasco, Carter & Horne have secured a permit to drill the No. 5 C. R. Tips in Live Oak County on Block 29, 150 feet from the north and 475 feet from the west lines. Henderson Coquat has secured a permit to drill No. 1 W. H. Sartin on

(Continued on Page 122)

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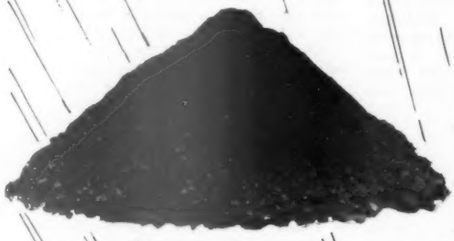

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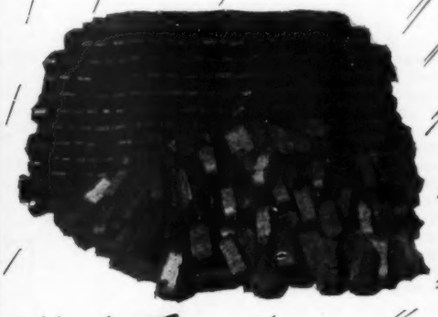


Fernholtz Briquetting Process

Keener Interest Shown in Wildcatting

Production of Louisiana-Arkansas Increases Despite Floods and Storms. Urania Continues Most Active Area

By James H. Dameron
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., Apr. 3.—Featured by a $250,000 lease deal and a keener interest in wildcatting, Louisiana and Arkansas brought in a substantial amount of new production and kept its daily average production on the climb despite the flooding rains and windstorms that swept the two states last week.

The outstanding deal was the purchase by the Magnolia Petroleum Co. of a producing lease from Wingfield, Dobie and Wilson, El Dorado operators, for a price reported to be $150,000 cash and $75,000 in oil. The lease is in the Smackover heavy oil district, including 35 acres of the NW SE, Section 5-16-15. The announcement of the sale of the producing property came behind the announcement of the Magnolia it was building a four-unit gasoline plant in the NW NW, Section 8-16-15.

The lease has eight producing oil wells making around 850 bbls. of oil daily and each well is making a substantial volume of gas. The ninth well on the lease is a gas well that came in making 25,000,000 feet daily. The Magnolia has production nearby.

A few days ago plans were announced for the erection of the gasoline plant in the vicinity of Kenova. Construction work started the last of the week and the cost is estimated at $200,000.

Magnolia After Production

It is reported the Magnolia is attempting to buy other producing property in that vicinity, but confirmation of the report could not be obtained. It is said the Magnolia will lay pipe lines within a 2-mile radius of its new gasoline plant, which is expected to be in operation July 1.

The heavy rain storm that swept over the oil fields in this district did not check production in its upward trend. The storm did little damage. Not a single derrick was blown down so far as could be learned and only a few field telegraph and telephone wires were down. Only a handful of wells were forced to shut down because of the high water.

Wildcatting in both states is being followed closely and the Ohio Oil Co.'s No. 18 Smith, Section 12-21-15, Caddo Parish, held the attention of oil men the latter part of the week. The 9⅞-inch casing is being lowered to 3,845 feet, where a showing of oil was found. However, it was not the oil showing that prompted the lowering of the casing to that depth.

When the hole was drilled the big gas sand from which No. 17 Smith is producing was mudded off with Barites. All of the fluid at the test was used to mud off the gas from the lime formation and it was beginning to find its way to No. 17 and being blown out.

May Be Deeper Production

Many close students of the deep sand territory in Caddo believe the present deep wet gas producing horizon in Caddo is a broken formation overlying the true Trinity sand. When the true Trinity sand is penetrated these same oil men predict a prolific deep sand production in Caddo.

J. C. Walton's (former governor of Oklahoma) wildcat test in DeSoto Parish, No. 1 Harp, Section 36-12-11, came in making 6,000,000 feet of gas and spraying salt water at 2,784 feet. The well was closed in and is waiting for orders. It is reported Walton plans to drill another test in the immediate vivinity.

The Empire Fuel Oil Co.'s test on the Russell lease, Section 14-10-24, which came in several days ago making 10,000,000 feet of dry gas at 2,892 feet, has been closed in. Like the Walton test, there was gas production nearby.

Mile's No. 1 Miller, Section 35-17-16, deep sand extension of the El Dorado Field to the west, failed to materialize into anything exciting. It was completed in sand at 2,930-35 feet and is pumping 100 bbls. of fluid daily, of which better than 75 per cent is salt water.

Clark and Melat's No. 1-A Saxon, Section 4-16-16, a 3,000-foot test in the Smackover light oil field, was another of the failures reported. It was abandoned in a red shale formation at 3,003 feet and is being plugged.

Not only did Lisbon fall down in initial production during the last week, but it also dropped off in daily average production. Smackover had five new wells with an initial production of 376 bbls. and El Dorado's single completion gave her 125 bbls. Union County has nine wells waiting on standard rigs, 88 drilling, 15 rigging and 21 derricks standing. Nevada County completed one of its best weeks with five producers making 875 bbls. initial.

Ouachita County's four producers yielded 548 bbls. initial. There are 9 wells in that county waiting on standard rigs, 5 have been temporarily abandoned, 24 drilling, 1 rigging up and 2 derricks standing.

Urania Continues Climb

The Urania Field continues to spread and its daily average production jumped almost 1,000 bbls. last week. Fifteen new wells in that field last week gave Urania 4,120 bbls. of new production. Two of the wells were 1,000-bbl. producers.

The first was the Ohio's No. 4 Urania, Section 18-10-2e, and at the last of the week the Arizola Petroleum Co.'s No. 2 Tannehill, NE cor. W half NW, Section 36-10-1e, came in making 1,000 bbls. of clean oil daily. The well is flowing through a 2-inch choke. It was completed in 8 feet of sand topped at 1,528 feet.

The completion of several heavy producers in Urania in the past fortnight has awakened a new interest in the field. Almost as fast as wells are completed in Urania new rigs spring up to keep the area's average up in active field operations.

At the close of the week Urania had 14 wells waiting on standard rigs, 37 drilling, six rigging up and 20 derricks standing.

Smackover heavy and Lisbon were the only two fields in Arkansas last week that failed to show a gain in daily average production. El Dorado made the greatest gain and easily offset the losses of the other two fields.

Urania continues to consistently boost Louisiana's daily production. Although Cotton Valley, Elm Grove, Haynesville and Homer dropped off lightly in production the gain recorded in the other fields give Louisiana a gain over last week.

Production by Fields

North Louisiana

Bellevue	2,510
Caddo light	8,730
Caddo heavy	2,150
Cotton Valley	8,030
De Soto and Red River	3,900
Elm Grove	615
Haynesville	10,400
Homer	5,845
Urania	6,945
Total	49,125

Arkansas

Smackover heavy	134,345
Smackover light	18,155
El Dorado	9,605
Lisbon	3,925
Nevada	2,100
Stephens	1,610
Total	169,740
Total both fields	218,865
Total last week	216,380
Increase	2,485

Union County

Falling far behind its usual pace in the race with Urania in Louisiana, the Lisbon area in Arkansas found it difficult to complete the week with 500 bbls. of new production.

Atlantic Oil Producing Co.'s No. 2 Andrews, Section 16-17-16, was one of the best wells completed. It was finished in sand at 2,100-21 feet, and is flowing 200 bbls. daily. Atlantic's No. 3 is drilling at 1,002 feet, and No. 4 has started drilling.

Wingfield and associates brought in another good well at their No. 1-A Dumas, Section 9-17-16, which is flowing 200 bbls. daily from sand at 2,078-93 feet. Their No. 2-A Dumas is drilling at 1,300 feet, and No. 3-A, in the NE SW NE, Section 9-17-16, is a rig. Location has been made for No. 4-A in the NW E half SW NE, and No. 5 in the NE W half SW NE, is drilling at 150 feet. No. 6-A in the NW SW NE, is a rig. The same operators have started drilling at No. 3 Slaughter, Section 9-17-16, and are drilling below the 1,230-foot level at No. 5 Slaughter; No. 6 Slaughter is drilling at 1,002 feet, and No. 7 Slaughter is a rig. Six-inch casing is being set at No. 1-A Slaughter, Section 9-17-16.

Lion Oil & Refining Co.'s No. 1 Goodwin, Section 16-17-16, was completed in sand at 2,087-2,115 feet for a 50-bbl. well flowing through 2-inch tubing. A rig is up for No. 3 Goodwin and the 10-inch was set at 120 feet at No. 4. Rovenger Oil Corp.'s No. 3 Goodwin, Section 16-17-16, is making 50 bbls. naturally from sand at 2,110-40 feet, and the 10-inch casing was set at 62 feet at No. 5 Dumas in Section 9-17-16. Arrangements are being made to set tubing at No. 4 Goodwin in Section 16, which has 300 feet of oil in the hole from sand at 2,105-26 feet.

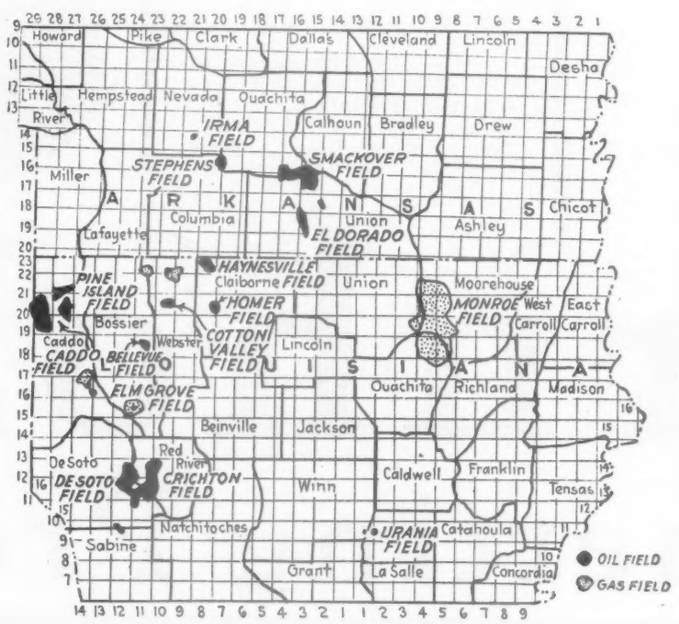
Simms Oil Co.'s No. 4-A Dumas boosted the pool's new production over the 500-bbl. mark when it was completed in sand at 2,086-2,102 feet, for a 35-bbl. well naturally. A rig is up for Simms' No. 5-A Dumas, NW cor. NE SW, Section 9-17-16.

Five Tests by Magnolia

The 6⅝-inch casing was cemented at 2,049 feet at Foster and associates' No. 1 Dumas, Section 9-17-16. Imperial Oil & Gas Co. has a rig up for No. 1 Goodwin to drill a south extension test in Section 21-17-16. Magnolia Petroleum Co. was reluctant to start operations in the new area but is now operating five tests in the north part of the field. Its No. 1 Dumas, Section 9-17-16, is waiting for cement to set at 2,065 feet, and a derrick is being built for No. 2 Dumas in CWL SE SE NE. No. 3 Dumas, NW cor. SE NE, Section 9-17-16, is a derrick pattern. No. 1 Slaughter, same section, was drilled to 2,092 feet and then the 6-inch cemented at 2,089 feet. A derrick pattern has been built for No. 2 Slaughter, NE cor. E half NW NE, Section 9-17-16. Six-inch casing was cemented at 2,121 feet at Marine Oil Co.'s No. 3 Slaughter, Section 9-17-16.

Miller and Cottingham have started drilling at their No. 2 Slaughter, Section 9-17-16, and have a rig up in the NE cor. W half NW NE, Section 9-17-16. Natural Gas & Fuel Co.'s No. 3 Andress, Section 16-17-16, is drilling at 1,485 feet, and No. 4 is below the 1,200-foot level. Offsetting the Imperial's test in Section 21, the Ohio Oil Co. has a derrick standing for No. 1 H. G. Murphy, in the Nw corner. Olvey and Jones' No. 1 Graham, Section 16-17-16, is drilling at 480 feet and their No. 3 Slaughter in Section 9, is drilling at 2,000 feet. Pure Oil Co.'s No. 1 Dumas, Section 9-17-16, is waiting on a standard rig and has 1,800 feet of oil in the hole from sand at 2,069-2,105 feet, and No. 2 Dumas has started drilling.

Another test in Lisbon, that will be followed closely and may extend production, is the Reliance Drilling Co.'s No. 1 Dumas, Section 10-17-16. The 10-inch casing was set at 202 feet. J. D. Reynold's No. 4 Dumas, Section 15-17-16, is a rig, and Reynolds and Marr's are swabbing to test broken sand at 2,115-50



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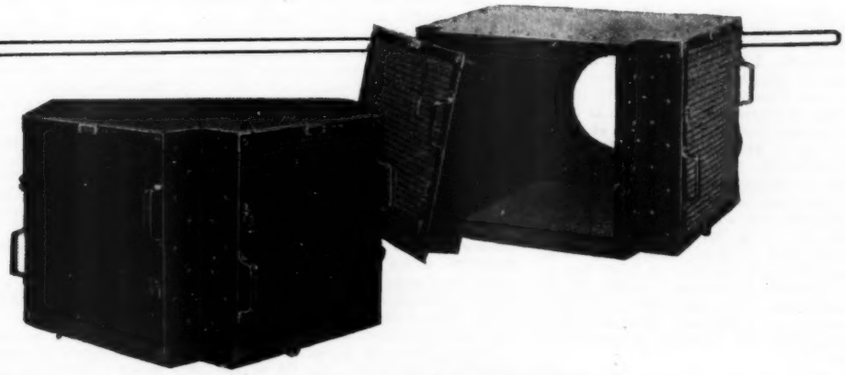

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feet at No. 1 Mooty, Section 15-17-16. Woodley Petroleum Co.'s No. 1 Dumas, Section 9-17-16, is waiting for a standard rig and has 1,500 feet of oil in the hole from sand at 2,087-2,115 feet. Woodley's No. 2 Dumas, CEL NE NW, is a rig.

Norphlet Area

In the Norphlet area, Broderick and Calvert's No. 5-B Murphy, Section 8-16-15, tested salt water with a show of oil at 2,485 feet, and passed it up. Corings are being taken at 2,640 feet. Same operators cemented the 6⅝-inch casing at 2,425 feet at No. 6-B Murphy, and have a derrick up for No. 7-B, in the SW corner of the section. J. W. Clark's two tests in that area after being rigged up are ready to go. They are No. 5 Palmer, Section 9-16-15, and No. 7 Cook, Section 17-16-15.

Constant Refining Co. has a derrick standing in the SW cor. NW NW, Section 31-17-15. Clark and Melat abandoned their deep test in Smackover, No. 1-A Saxon, Section 4-16-16, in red shale at 3,003 feet. Eason and associates cemented the 6-inch at 2,624 feet at No. 7 Murphy, Section 15-16-15. The drilling stem stuck at 2,540 feet at Eason and associates' No. 3 Palmer, Section 9-16-15. Estes and associates' No. 2 Murphy, Section 15-16-15 has 2,000 feet of oil in the hole from sand at 2,606-14 feet and is shut down waiting for a standard rig. A rig is up for Estes and associates' No. 3, in the SE cor. N half NW SW NW.

Northwest of the El Dorado Field, the El Dorado Union Oil Co. abandoned No. 1 Ennis, Section 23-17-16 at 2,556 feet. Federal Petroleum Co.'s No. 6-B Lawton, Section 10-16-15, is drilling at 2,535 feet and its No. 2-B Wells, Section 15-16-15 is drilling at 2,570 feet. Fergerson and associates cemented casing at 2,633 feet at No. 2 Howard, Section 7-16-16. Grimes and Jones' No. 1 Lovett, Section 6-18-14, is drilling at 1,990 feet.

Gulf Refining Co.'s No. 2 Fagg, Section 7-16-16, was completed for a 6-bbl. pumper in sand at 2,670-74 feet. Gulf's No. 17 Alphin, Section 2-16-15, is shut down at 2,520 feet because of high water. No. 2 Clawson, Section 14-16-15, is drilling in gumbo at 1,875 feet, and No. 37 Hardy-Murphy, Section 5-16-15 is drilling at 2,020 feet. The Gulf's No. 3 McMullen, Section 1-16-16, is drilling at 2,395 feet.

Tested Salt Water

Hickman and associates' No. 4 Hayes, Section 21-16-15, tested salt water at 2,755 feet and drilled to 2,905 feet, and shut down for orders in red shale. W. H. Harper, trustee, has a derrick pattern built for No. 1 Mathews, SE cor. Section 34-16-16. Humble Oil & Refining Co.'s No. 3-B Flenniken, Section 9-16-15, is drilling at 2,086 feet, and No. 2-B Lawton, Section 7-16-15, is drilling at 2,603 feet. H. L. Hunt's No. 1 Swilley, Section 28-16-16, tested dry and arrangements are being made to re-set the liner and test sand at 2,056-68 feet. Six and five-eighths-inch casing was cemented at 2,673 feet at E. M. Jones' No. 4 Murphy, Section 17-16-15. Keene and Wolf are drilling out the plug at 2,568 feet at No. 2 Bradford, Section 7-16-15. W. R. Keever's No. 6 Murphy, Section 8-16-15, is drilling at 1,008 feet. Keever's No. 5 Sanford, Section 17-16-15, is drilling at 2,175 feet.

Kennebrew and associates are bailing to test sand at 2,242-60 feet at No. 7 Williams, Section 3-16-15. The Louisiana Oil Refining Corp.'s No. 4 Hodges, Section 7-16-15, is being bailed to test sand at 2,747 feet. Lion Oil & Refining Co.'s No. 1 Wilson, Section 17-16-15, is drilling at 2,300 feet. Long and associates have a rig up for No. 1 White, NE cor. SW NE (corrected location) Section 17-17-16. Magnolia's No. 3 LeCroy, Section 17-16-15, is being drilled in at 2,640 feet, with standard tools. Magnolia's No. 3 Hessler, Section 8-16-16, is drilling at 2,405 feet.

Marr and Woods completed a small well in the Norphlet area at their No. 3 Murphy, Section 17-16-15, which was finisher in sand at 2,674-77 feet, for a 25-bbl. pumper. Mazda Oil Corp.'s No. 6-R Lawton, Section 10-16-15, is drilling at 1,900 feet. Murdock and associates are making arrangements to deepen No. 7 Vestal, Section 17-16-15, which was completed some time ago at 2,694 feet. Same operators have moved the rig off No. 2 Hays, Section 4-16-15 and will not deepen as planned. Natural Gas & Fuel Co.'s No. 2 Flenniken, Section 8-16-15, is waiting for the cement to set at 2,489 feet. Same company passed up a 20,000,000-foot showing of gas at No. 3-C Murphy, Section 8-16-15, and is drilling ahead.

North of Lisbon

North of Lisbon, Owens and associates are drilling at 2,490 feet at No. 1 Porter, Section 4-17-16. Leo P. Pukrul's No. 2 Smith, Section 17-16-15, is drilling at 2,650 feet. Pure Oil Co.'s No. 8 Friend, Section 6-16-15, added another good producer to the Norphlet district's list. It was finished in sand at 2,534-45 feet, and is making 225 bbls. on the pump. Eight-inch casing was cemented at 2,290 feet at Pure Oil Co.'s No. 6 Bilyew, Section 8-16-15, and No. 9 Friend, in Section 6, is drilling at 1,820 feet.

Simms Oil Co.'s No. 7 Cook, Section 16-16-15, tested salt water at 2,629 feet, and the hole was cemented and arrangements are being made to whipstock at 2,490 feet. Six and five-eighths-inch casing was cemented at 2,390 feet at Sinclair Oil & Gas Co.'s No. 8 Flannigan, Section 6-16-15. Sun Oil Co.'s No. 8 Hatfield, Section 6-16-15, is drilling at 1,960 feet, and its No. 1 McClanahan, Section 1-16-16, tested salt water at 2,587 feet, and is to be abandoned. Sunny Jim Oil Co. is drilling out the cement at 2,443 feet at No. 7 Flenniken, Section 9-16-15.

Standard Oil Co.'s No. 4 Burns, Section 31-17-15, in the El Dorado Field, was completed for a 125-bbl. well on the pump in sand at 2,214 feet. Six and five-eighths-inch casing was cemented at 2,403 feet at Unity Petroleum Co.'s No. 8-A Bilyew, Section 8-16-15, and the 8¼-inch casing was cemented at 2,470 feet at No. 9-A Bilyew.

Williams and associates' No. 2 Goodwin, Section 16-16-14, is drilling at 1,090 feet. Wingfield and associates' wildcat test No. 1 Cruse, Section 27-17-16, is reaming to the bottom at 2,522 feet. Six-inch casing was cemented at 2,414 feet at the Woodley Petroleum Co.'s No. 4 Bilyew, Section 8-16-15. Sun Oil Co.'s No. 7 Hatfield, Section 6-16-15, was completed for a 30-bbl. pumper in sand at 2,571 feet, and The Texas Company's No. 2 McClanahan, Section 12-16-16, was abandoned in red shale at 2,816 feet.

Ouachita County

Calcord and associates' No. 5 Laney, Section 31-15-15, is waiting for a standard rig with 1,400 feet of fluid in the hole from sand at 2,601-04 feet. H. M. Harrell is trying to kill a water flow at 912 feet at his No. 1 Moline Timber Co., Section 32-11-17. Humble Oil & Refining Co. abandoned the location for No. 10-B Arnold, Section 26-15-16. The 6⅝-inch casing was cemented at 2,305 feet at Humble Oil & Refining Co.'s No. 11-B Arnold. Magnolia's No. 12 J. Goodwin, Section 5-16-15, is drilling at 2,330 feet, and No. 2 Murphy, Section 30-15-16, has been temporarily abandoned and the rig moved off. Magnolia's No. 3 Shirey fee, Section 30-15-16, is drilling at 2,268 feet. Marine Oil Co.'s No. 10 Umsted, Section 5-16-15, has 800 feet of oil in the hole from sand at 2,364-68 feet, and is waiting for a standard rig. Six-inch casing was cemented at 2,260 feet at A. Meek's No. 3 LaGrone, Section 36-15-17. Ohio Oil Co. cemented 6⅝-inch casing at 2,614 feet at No. 7 Goodwin, Section 29-15-15.

In Smackover, Pure Oil Co.'s No. 3 Brister, Section 28-15-15, was completed for a 30-bbl. pumper in sand at 2,443-45 feet. Pure Oil Co.'s No. 12 Brister, Section 28-15-15, is a rig. Roxana's No. 5 Snyder, Section 34-15-15, has 1,400 feet of fluid in the hole from sand at 2,356-61 feet, and is waiting for a standard rig.

Simms Oil Co. completed a 150-bbl. well in Smackover, at its No. 5 J. E. Murphy, Section 28-15-15, at 2,624 feet. Simms Oil Co.'s No. 5 T. Murphy, Section 29-15-15, is drilling at 2,204 feet. Sinclair Oil & Gas Co.'s No. 9 Flannigan, Section 6-16-15, shut down at 2,290 feet because of high water. Southern Crude Oil Producing Co.'s No. 4 Murphy, Section 4-16-15, was completed for a 250-bbl. pumper in sand at 2,352-53 feet. Southern Crude Oil Producing Co.'s No. 6 Joyce, Section 34-15-15, is waiting for the cement to set 2,636 feet, where the 4½-inch casing was cemented. Same company's No. 4-A Murphy, Section 4-16-15, tested salt water at 1,986 feet, which was cased off and the test is drilling ahead at 2,057 feet.

Standard Oil Co. is underreaming the 4½-inch casing to 2,639 feet at No. 23 Umsted, Section 32-15-15, which was completed last August for a 30-bbl. pumper at 2,608 feet. Sunny Jim Oil Co. cemented 8¼-inch casing at 1,964 feet, at No. 3 Laney, Section 36-15-16. The Texas Company's No, 11 Johnson, Section 3-16-15, is waiting on a standard rig and has 450 feet of fluid in the hole from sand at 2,545-55 feet. Unity Petroleum Co.'s No. 9 Umsted, Section 33-15-15, is also waiting for a standard rig and has 400 feet of oil in the hole from sand at 2,393-96 feet. Woodley Petroleum Co.'s No. 4-A Umsted, Section 4-16-15, is shut down at 1,500 feet, because of high water.

Stephens District

In the Stephens district, the Buffalo Oil Co. cemented the 6-inch casing at 1,512 feet, at No. 2 Davis, Section 22-15-19. Equity O. & D. Co.'s No. 1 Morgan, Section 27-15-19, is in sand at 2,169-75 feet, and is shut down waiting for a standard rig.

J. E. Crosbie's No. 1 Wallace, Section 27-15-19, was one of the three wells completed in the Stephens district last week. It is making 18 bbls. on the pump from sand at 2,235 feet. Louisiana Oil & Refining Corp.'s No. 1 Green, Section 22-15-19, was the best well completed in Stephens last week, and it is pumping 100 bbls., 15 per cent salt water, from sand at 1,552-55 feet. Gossett and associates are arranging to deepen No. 1 Cosden, Section 21-15-19, which is 3 feet in sand topped at 1,457 feet. J. D. Reynolds' No. 1 Thompson, Section 22-15-19, is waiting for a standard rig at 1,476 feet. In Columbia County, Magnolia's No. 8 Rinehart, Section 36-15-20, was finished as a 10-bbl. pumper in sand at 2,196-2,206 feet. The 8¼-inch casing was cemented at 900 feet at the Pluto Oil Co.'s No. 2 Robinson, Section 23-18-23, and the test is drilling at 1,000 feet.

Nevada County

Bemis and associates completed two nice wells in Section 2-14-21. Their No. 3 J. D. Ellis, was brought in in sand at 1,146-53 feet, and is making 350 bbls. naturally. No. 4 Ellis was completed in sand at 1,140-51 feet, and is pumping 150 bbls. daily. Humble Oil & Refining Co.'s No. 2 Graves, Section 2-14-21, is making 150 bbls. naturally from sand 1,160-67 feet. Humble's No. 2 Ellis, Section 2-14-21, is waiting for a standard rig and has 800 feet of oil in the hole from sand at 1,230-33 feet. The liner is being set at Humble's No. 3 Graves, same section, which had the sand at 1,138-50 feet.

Humble has built a derrick for No. 4-A Graves, in the SW cor. NW SW, Section 1-14-21, and a derrick is standing for Humble's No. 1-B Graves, NW cor. SW SW, Section 1-14-21. Grayson and associates are drilling at 1,200 feet at No. 1 Graves, SE cor. SW NE, Section 2-14-21. Keystone Oil Co.'s No. 7 Waters, Section 10-14-21, was completed at 1,192 feet, for a 75-bbl. pumper. Its No. 8 Waters, in the same section, is pumping 150 bbls. daily from sand at 1,210-14 feet. The cement plug at 1,206 feet is being drilled out at Keystone's No. 9 Waters. Magnolia Petroleum Co.'s No. 1 B. F. Johnson, Section 3-15-21, is shut down at 4,600 feet, and will be abandoned. Smitherman and McDonald's No. 4 Waters, Section 2-14-21, is drilling at 1,140 feet. Steele and associates' No. 1 Haynie, Section 1-14-21, is a rig. Straughn and Greason's No. 1 Tidwell, Section 22-13-21, is shut down in gumbo at 1,200 feet, waiting for orders. Zing and associates' No. 4 Womack, Section 10-14-21,

(Continued on Page 84)

ARTESIA PIPE LINE RUNS OFF DUE TO PARAFFIN AND SAND

By Special Correspondent

ARTESIA, N. Mex., Apr. 3. — Pipe line runs for the local field for the last 15 days in March totaled 45,510 bbls. A slight decrease in production is shown due to paraffin and sand trouble, which is rapidly being overcome by production men. One producer that had dropped to 17 bbls. daily has been brought back to 70 on being cleaned out.

The Texas Company has purchased the George E. Bobb permit in Sections 17 and 18-17-28, on which there are now three shallow wells, making 2 bbls. daily from 600 feet. It is the intention of The Texas Company to drill a 2,500-foot test.

The Dome Oil Co. has completed a nice producer in its No. 5, located in Section 21-18-28, which encountered 27 feet of pure, loose sand that is giving up the oil freely, accompanied by strong gas pressure. This hole was shot from 2,159-85 feet and is making 250 bbls. flush.

Flynn, Welch & Yates have two producers for the week. No. 30, in the NE of the SE of Section 21-18-28, is a good producer from 2,169-89 feet, being good for 200 bbls. No. 40, in the SE of Section 20-18-28, after being drilled to 2,050 feet, was shot from 1,996-2,022 feet and is a nice well.

The Frontier Petroleum Co. has a good well in No. 2 McQuigg Brothers, which was shot in the 2,300-foot sand, being good for 100 bbls. No. 10 of this company is being spudded in today.

In the north extension, Levers-Carper have completed No. 2 in Section 3-18-28, which swabbed 100 bbls. in 40 minutes Tuesday. This producer was shot from 2,425-42 feet.

Snowden & McSweeney have a light well in No. 4 in the NE of Section 33-18-28, which was drilled to 2,900 feet and shot from 2,640-80 feet. The sands encountered at 2,440 and 2,000 feet will also be given a shot.

A gas sand has been picked up in the Wade & Bujac test in the NW of Section 19-18-29 at a depth of 910 feet. This hole is now down 1,200 feet.

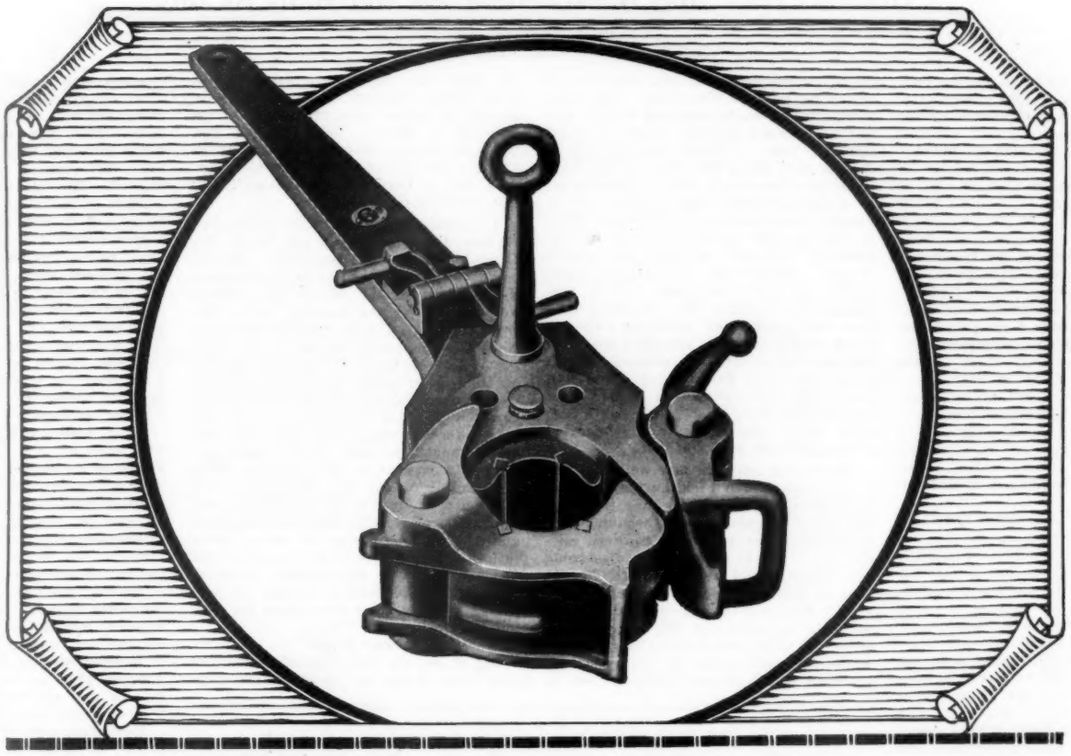
A fair oil showing has been encountered in the Ohio Oil Co.'s No. 1 on the Edgerton permit in Section 18-18-29, east of the productive area. After drilling through a gas sand at 2,735 feet, the pay sand was drilled into at 2,750 feet. This company has completed its No. 1 New States, in Section 8-18-28, which is a fair producer from 2,142-60 feet.

Considerable acreage has changed hands in the past week in the territory recently opened by the Maljamar Corp. Its No. 1 Baish, wildcat, continues to make 6,000,000 feet of gas after being in 12 days. Most of the trading has been done in blocks of from 40 to 320 acres and this is being purchased by local operators. Work of completing this well is being carried on as rapidly as possible as the 8¼-inch casing has been set. A test of the gas, made by the Phillips Petroleum Co., shows it to be high in gasoline content.

Drilling Report

Braden, Trueshell, Vandagriff No. 1, in the NE cor. of the SE of Section 5-17-28, setting packer at 1,950 feet; Colorado Drilling Co.'s No. 1 Irvin, Section 8-16-27, fishing; Compton No. 2, Mann permit, Section 3-18-27, drilling at 800 feet; Danciger Oil & Refining Co.'s No. 2 Beeson, Section 18-18-28, shut down due to broken engine, Danciger's No. 2 Ragsdale, Section 18-18-28, location made; Dome Oil Co.'s No. 5, SW cor. Section 17-18-28, cleaning out after shot; Flynn, Welch & Yates' No. 30, Section 21-18-28, cleaning out after shot; No. 39,

(Continued on Page 122)



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Inglewood Has Deep Producing Zone

Associated Oil Co. Completes 1,500-Bbl. Well Making 23 Gravity Crude. May Boost Production Materially By July

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., April 3.—One of the most important developments in the California fields in a long time was the completion by the Associated Oil Co. of its No. 2 Vickers with a production of 1,500 bbls. of 23 gravity crude from the deep zone of the Inglewood Field. This producing horizon may result in considerable new work in the Inglewood Field and one prominent geologist here estimates Inglewood production may be increased about 25,000 bbls. daily by the middle of July. The policy of the Standard Oil Co. of California and the Pan American, who own adjoining acreage to the Associated has not as yet been decided but the situation appears somewhat critical unless these two big companies decide not to drill at this time.

Completion of the Associated Oil Co.'s No. 101 Lloyd, an outpost in the extreme eastern part of the Ventura Avenue Field, was another feature of the week not only because of the comparatively large initial production secured, 1,500 bbls. daily, but also because of the large amount of new productive acreage added. It is estimated that this new well has extended the field over a mile to the east and additional drilling may push the limits out still further. The oil secured in this district is very desirable because of its refining qualities and the gas which accompanies it is similarly highly desirable because of the unusually large gasoline content. A small part of the crude is going to the Atlantic Seaboard while the gas, after being treated by the Pacific Gasoline Co., is sold for domestic purposes in Los Angeles and other surrounding communities. Drilling work to date has only been on a comparatively small scale due to the fact that operators are not pushed for crude and it does not look as though any intensive drilling program is anticipated at the present time, although of course the future policy of the Tidewater and Standard Oil Co. of New York, which concerns have merged with the Associated and General Petroleum, may alter the situation.

Pumper Starts Flowing

Geologists and petroleum engineers are unable to account for the action of the California Petroleum's No. 3 Elliott in the Huntington Beach Field which suddenly turned into a flowing well during the early part of the week. The company was agreeably surprised to find that for some unaccountable reason the well changed from a 55-bbl. pumper into a flowing well doing 795 bbls. a day. This sometimes happens in fields producing oil of a comparatively high gravity and is usually the forerunner of edgewater. This, of course, may not be the case in this instance, although the well has always shown a rather high cut running somewhere around 7 per cent. It is also thought that perhaps the formation may have been mudded off while the well was being drilled and that sufficient gas later accumulated to open up a channel through which the oil is now flowing. The well was originally carried down to 4,482 feet and plugged back by stages to 3,307 feet, after which the casing was perforated from 3,225 feet to 3,300 feet.

There were only six new wells finished in the Long Beach Field during the past week, considerably smaller than the average, but this reduction in the number of completions was due to an enforced idleness as a result of a rather disastrous gas blowout and resulting fire in the area at present under intensive development. The well which created all the havoc in the extension was No. 3 Cerritos of the Wilbur-McAlpine-Craig Oil Co., which blew in during the early part of the week doing around 10,000,000 feet of gas daily. It took fire a few minutes after getting beyond control and it required the steam from 30 boilers to extinguish it. Before being snuffed out, however, the fire destroyed several tanks and the derrick of Keck and McWhorter's No. 3 Cerritos, approximately 30 feet south of the gasser.

The Julian Petroleum Corp. was forced to tear down the rig of its No. 1 McLaughlin, a recent completion directly north of the gasser, in order to eliminate the fire hazard and also permit workers to get close to the burning well. The crew working on Keck and McWhorter's No. 3 Cerritos heard the roar of gas when the Wilbur-McAlpine-Craig's well started on its wild rampage and, while they retreated to a point of safety, one of them had the presence of mind to close the gate before leaving. This well had just been brought in and would have undoubtedly created a very serious situation had it caught fire. Because of the proximity of rigs in this immediate section, particularly all work was suspended and the various operators were forced to unite their efforts in extinguishing the fire. Work was immediately resumed, however, and it looks as though we may expect a fairly large completion list during the next week.

Long Beach

All of the six well finished during the past week in the Los Angeles Field were comparatively small, the largest being the Marine's No. 55 Cerritos, which came in doing 270 bbls. of clean 26.1 gravity oil daily. This hole was carried down to 4,492 feet and finished with a 6¼-inch liner, 197 feet of which was shop perforated. The Marine has just finished another potential producer, No. 59 Cerritos, and it will undoubtedly be given a test within the next day or so. The Craig-Burns Oil Co. brought in a 150-bbl. pumper when No. 22 Cerritos was put on the beam at 4,470 feet. The output tests 21.6 degrees and shows a cut of 1 per cent. E. L. Blanton recovered from a rather difficult fishing job which has been holding up progress in his No. 1 Cerritos for several weeks and he expects to finish the well within the next week or 10 days.

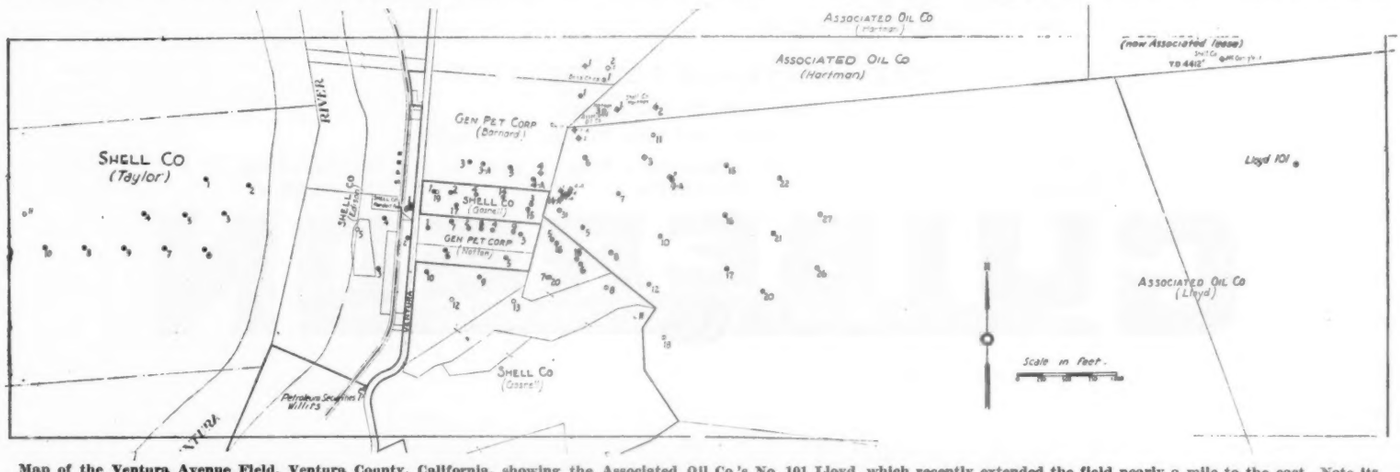
A. J. Delaney brought in a 146-bbl. well when his No. 14 Cerritos was given a test at 4,440 feet, after being finished with a 4¾-inch liner. Delaney also finished drilling three other wells, Nos. 16, 20 and 24, and they should all be on production shortly as the preliminary preparations have been completed. The California Petroleum's No. 1 Bucklin was a distinct disappointment when put on the beam at 4,497 feet, as its maximum pumping was 40 bbls. of dirty 18.4 gravity oil, the cut running around 20 per cent. It is believed that the company will put another plug in bottom as it is quite evident that the first attempt to exclude bottom water has proven futile.

Beesmeyer and Yerke's No. 1 Cerritos, drilled to 4,395 feet and finished with a 4½-inch liner, was a 150-bbl. pumper, the oil being clean and testing 21.8 degrees. P. L. Cooper has sold his No. 2 Cerritos to the Northwest Gasoline Co. and the new owners have already taken possession and are drilling ahead. Ed Herwick's No. 26 Cerritos turned out to be a 75-bbl. pumper from 4,450 feet, the oil testing 21.6 degrees and showing a cut of 2 per cent. The United Oil Co. is making preparations to finish No. 1 Ketchum at 4,405 feet and the well is scheduled to be swabbed for production tomorrow. A water witch is being run in No. 1 Cook, which has been plugged back from 4,481 feet to 4,420 feet in an effort to exclude apparent bottom water and it is thought that something definite will be learned regarding the water trouble.

There was practically no change in the number of wells going ahead in the northwest extension, the number drilling at the close of the current week being ap-

Tanker Shipments From Los Angeles to Atlantic and Gulf Coast Ports

Commodity—	Total This Week	Daily Average	Total Last Week	Daily Average	This Year To Date	Same Time Last Year
Crude oil	155,851	22,264	172,389	24,627	2,730,792	4,385,134
Fuel and gas oil	.....	.....	301,487	43,070	2,322,056	146,803
Gasoline	226,636	32,377	81,394	11,628	1,581,792	973,073
Tops	.....	.....	.....	.....	74,619	80,578
Coastwise—						
Crude oil	622,202	88,886	445,265	63,466	5,718,880	6,904,390
Fuel and gas oil	137,429	19,633	236,525	33,789	2,014,281	3,210,618
Gasoline	184,029	26,290	139,854	19,978	1,747,645	1,183,856
Kerosene	5,740	820	4,860	694	86,296	49,961
Tops	.....	.....	74,011	10,573	200,026	41,010
Exports—						
Crude oil	42,140	6,020	.....	.....	817,550	526,455
Fuel and gas oil	151,700	21,671	262,932	37,562	3,849,197	3,210,891
Gasoline	83,164	11,881	74,260	10,609	760,869	927,603
Tops	.....	.....	.....	.....	.....	89,932
Kerosene	57,668	8,238	.....	.....	478,113	313,530
Tanker Shipments From San Francisco to Atlantic and Gulf Coast Ports						
Crude oil	.....	.....	.....	.....	.....	.....
Fuel and gas oil	.....	.....	73,571	10,510	195,023	.....
Gasoline	.....	.....	.....	.....	341,606	332,906
Tops	.....	.....	.....	.....	.....	287,629
Kerosene	.....	.....	.....	.....	.....	.....
Lubricants	.....	.....	.....	.....	82,025	81,939
Coastwise—						
Fuel and gas oil	61,823	8,832	.....	.....	914,649	831,252
Gasoline	115,126	16,447	27,048	3,864	890,027	674,134
Kerosene	29,180	4,169	.....	.....	104,035	72,985
Exports—						
Fuel and gas oil	.....	.....	26,333	3,762	744,304	415,399
Gasoline	.....	.....	78,167	11,167	324,323	147,410
Kerosene	.....	.....	24,460	3,494	357,148	217,765
Lubricants	.....	.....	.....	.....	.....	130,620



Map of the Ventura Avenue Field, Ventura County, California, showing the Associated Oil Co.'s No. 101 Lloyd, which recently extended the field nearly a mile to the east. Note its proximity to the old No. 1 McGonigle of the Shell Co., which was drilled in 1918 to 4,412 feet and was abandoned because of mechanical trouble. The No. 1 McGonigle was located on top of the surface structure, but is probably far down the north flank of the sub-surface structure.

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proximately the same as that shown during the preceding week. The tally just made indicates that there are 81 drilling projects below the 4,000-foot level, three more than the number checked at the close of the corresponding period just preceding. There are 24 drillers ranging between 3,000 and 4,000 feet, as compared with 25 last week, and 17 above the 3,000-foot level, an increase of three strings between the two periods in question.

Ventura

The completion of No. 101 Lloyd by the Associated in the Ventura Avenue Field was one of the most important developments which has materialized during the past several months. The importance of this well lies in the fact that it proves up several hundred additional acres of highly productive property for the Associated and extends the limits of the field about a mile to the east. The completion of this new producer has been anticipated for several weeks and, since it leaves the eastern limits of the field undefined, it is quite possible that additional drilling may extend it another 1,000 feet or so. The well only showed an initial daily output of 1,500 bbls. of 29.8 gravity oil and 750,000 feet of gas upon completion but it is thought that the flow will increase after the well has been on production for a few days.

No. 101 Lloyd is flowing from 5,392 feet and, while the company intended to go deeper than this, it was found impossible to do so because of the exceedingly heavy gas pressure. The hole has been kept filled with a hematite laden fluid, called liver by the drillers because of its blood red color, but notwithstanding the immense weight of this column, the well staged a short gas blowout a month or so ago. It is quite possible that this heavy circulating fluid is retarding the flow of the well and the output may increase when the hematite and mud are removed. The gas pressure in this field has always proved a troublesome factor and this is one of the reasons why none of the wells drilling in this area has yet gone entirely through the producing zone. The Lloyd lease of the Associated is one of the most productive in the State at the present time and the saturated beds of this structure are yielding an exceedingly high gravity oil. Judging by the present status of No. 11 Lloyd and Nos. 26 and 27 on the same lease, the Associated should be in a position to substantially boost its field production within the next week or 10 days.

Shell More Active

The Shell is gradually increasing its drilling program in this district and at the present time is running two strings of tools on the Edison lease and seven on the Gosnell and has additional rigs going up on these two leases, as well as another on the Taylor property. The General Petroleum has but two drillers to its credit in this area, No. 10 Notten at 3,647 feet and No. 3-A Barnard at 3,659 feet. The completion of the Associated's new well has stimulated interest in this area because of its possible effect on future State production and operators will watch the outcome of No. 1 Hartman of the Bolsa Chica, a north line well, and No. 1 Willett of the Petroleum Securities in the southern part of the field. It is believed that both of these projects have an excellent chance of coming into production but it is problematical just how much further the productive limits extend in a northerly and southerly direction. The completion of each well will undoubtedly result in increased drilling, which will necessitate at least one offset in each case.

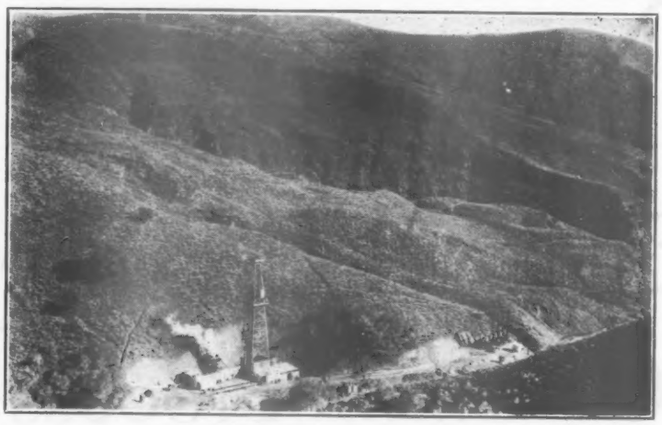
The Milham Exploration Co.'s No. 1 Sexton, east of the Associated's No. 101 Lloyd, is being reamed preparatory to landing a string of 11-inch around 3,800 feet. This pipe is being landed for protection purposes only and not as the result of any showing. No. 1 Hobson of the Chanslor-Canfield Midway Oil Co., west of the Ventura Avenue Field, is standing cemented at 3,825 feet for a similar reason. There are several other interesting wildcats drilling in Ventura County but none of them are yet deep enough to pick up production. Hoyt S. Gale's No. 2 Beardsley, near Camarillo, is down 2,800 feet, while the Shell's No. 1 Berlywood, approximately 10 miles east of the Ventura Avenue Field and not far from Moorpark, is drilling ahead in a sandy shale at 2,895 feet.

The Standard is conducting a rather intensive prospecting campaign in the district northwest of Montalvo in Ventura County to determine structural conditions before locating a deep test. The company is at present preparing to spud in No. 1 Valentine some time within the next week or 10 days and it is thought that this well will provide the necessary information required. No. 1 Valentine is approximately one-half mile south of No. 1 Haydock, the second test, which in turn is about a similar distance south of No. 1 Argabrite, the original prospect hole. Work on the Argabrite structure test was suspended at 1,319 feet, while No. 1 Haydock was carried down to 1,522 feet. King Gillette has just staked a location and will probably have material on the ground shortly for No. 3 Elkins in Section 5-3-19. It is reported that Oscar Howard and Gillette are both interested in this project.

Inglewood

The Pacific brought in a new well in the Inglewood Field flowing 695 bbls. of 21.3 gravity oil cutting 2 per cent. It was drilled down to 2,253 feet and finished with an 8¼-inch liner carrying 972 feet of shop perforated. This completes the Pacific's drilling program in this field and, although Nos. 46 and 51 are standing rigged up, it is unknown just how soon they will be spudded in. The Standard has officially taken over the Pacific's various properties and this company's policy will in the future determine the amount of work to be done.

The Standard is only doing a limited amount of development work in this field and as a result has but two drilling wells on Los Angeles Investment Lease No. 1, Nos. 42 and 43, one on Vickers Lease No. 2, and another on the Stocker property. With the exception of workovers and cleanout jobs, none of the operators is doing any work at all due to the fact that the various leases have been practically all drilled up. The development of the deeper zone, however, is expected to change the situation at any time.



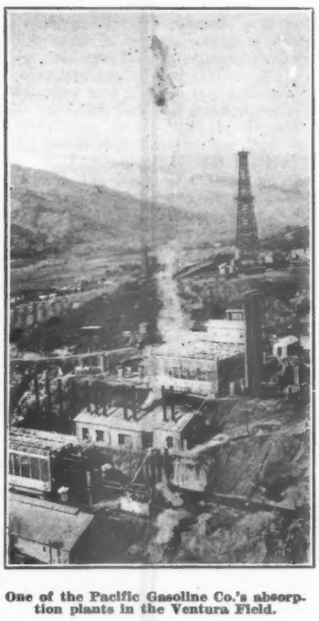
Looking eastward down the hillside toward the Associated Oil Co.'s No. 101 Lloyd, a wildcat located nearly a mile east of the Ventura Field. Note the four boilers down the valley. The flow tanks are located on top of the hill back of the camera their elevation being about the same as the hills which appear in the background of the picture.

Rosecrans

There was not a single completion listed in the Rosecrans Field during the past week but it looks as though the Barnsdall and Union should increase their production in the near future as the result of the completion of new wells on the O'Dea, Rosecrans and Howard Park properties. These two companies are quite wisely refraining from all unnecessary drilling until crude prices reach a higher level. This grade of crude at present rates the highest schedule but it will undoubtedly command a higher price in the future because of its high gasoline content. The Superior Oil Co. is contemplating the abandonment of its No. 1 Weaver, redrilled and deepened to 4,812 feet, but no definite action has yet been taken along this line. The company has, however, filed abandonment notices on No. 4 Maxwell and No. 7 Maxwell, neither of which was ever productive. The former was carried down to 5,043 feet while the latter was suspended at 4,947 feet.

Torrance

The Chanslor-Canfield Midway Oil Co. put its No. 74 Del Amo at Torrance on a production test during the early part of the week but it only resulted in a 100-bbl. pumper from 3,500 feet, the oil being clean and testing 19.6 degrees. Immediately upon completion of this hole the company started work on No. 58 Del Amo and No. 89 Torrance, both being spudded in a few days ago. Drilling operations in this field consist of about six wells being put down by the Shell, Chanslor-Canfield Midway Oil Co. and Fullerton Oil Co. The Petroleum Securities is rigging up rotary equipment in No. 1 Hogan and this well, together with the R. & D. Oil Co.'s No. 2, will be spudded in shortly.



One of the Pacific Gasoline Co.'s absorption plants in the Ventura Field.

Although the Union and Shell are each drilling three new wells in the Dominguez Field, there is no reason to believe that the gentlemen's agreement to keep drilling down to a minimum will be abrogated. These two companies are developing this district in an orderly manner and two of these six wells are really experiments and the rest of preliminary work undertaken by the Shell several months ago, at which time an attempt was made to stimulate oil and gas production by pumping dry gas back into one of the wells on the Reyes property.

With the exception of the big increase in production shown by the California Petroleum's No. 3 Elliott at Huntington Beach, work in that area showed very little change during the past week. The

(Continued on Page 90)

GOOD PRODUCTION OF WET GAS FOUND IN TURNER VALLEY, CANADA, WELL

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ont., Apr. 3. — In the Turner Valley Field, southwest of Calgary, Illinois-Alberta Oil & Refining Co.'s No. 1, Section 12-20-3w5, at 3,338 feet brought in a wet gas flow, good for approximately 2,000,000 feet a day. The test has been drilling open hole for some days, hard and corparatively soft formations alternating. The new gas flow is thought to come from the same geological horizon that Royalite's No. 4, between 2,800 and 2,900 feet, encountered a 7,000,000-foot gas flow. The Illinois-Alberta is going on down with a 6-inch hole and was last reported drilling at 3,360 feet. The gas has a pronounced sulphur odor and is accompanied by traces or dark oil; Fred Blair, a driller with the Illinois-Alberta outfit, was temporarily blinded by the sulphur fumes.

Vulcan Oils, Ltd.'s No. 1, Section 13 20-3w5, has been carried to 4,240 feet with the 8¼-inch casing down to 4,200 feet. The drillers are now working in open hole, and apparently in the top of the Madison limestone. Royalite Oil Co.'s No. 5, Section 7-20-2w5, the test nearest to the No. 4 naphtha gusher, is reported drilling at 2,996 feet. Royalite's No. 6 Section 31-19-2w5, is shut down at 2,854 feet.

Dalhousie Oil Co.'s No. 1, Section 18-20-2w5, is cleaning out the old hole, preparatory to carrying it on down from the 3,345-foot horizon. Dalhousie Oil Co.'s No. 3, Section 13-20-3w5, is drilling around 3,250 feet. McLeod Oil Co.'s No. 2, Section 1-20-3w5, is underreaming to run 8¼-inch casing. The test is down 3,357 feet, and difficulties encountered with paraffin in the hole, which have hitherto interferred with bailing, have been overcome.

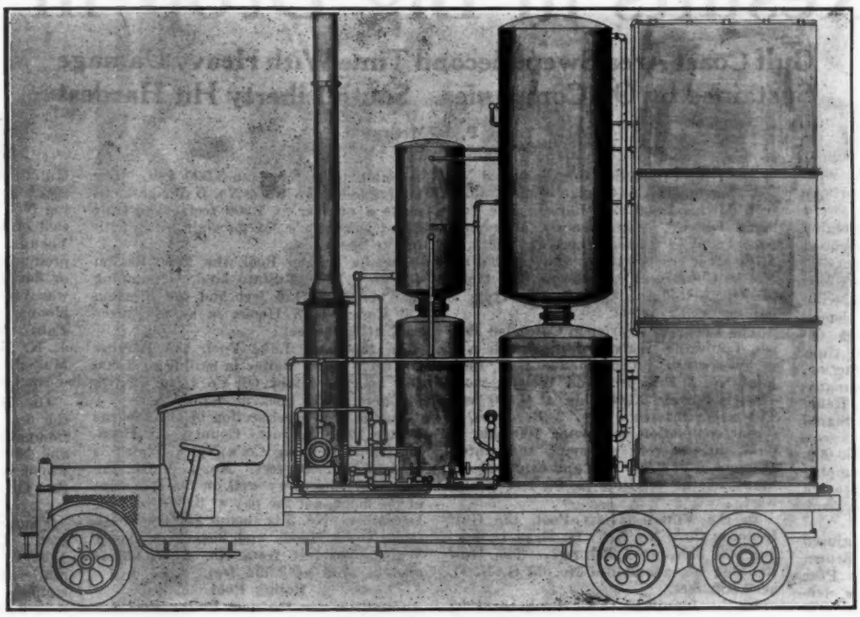
Shareholders of Alberta Petroleum Consolidated, Ltd. are reported to be planning a reorganization of the company and an investigation into its assets. The company was formed in the latter days of the Calgary boom through the merger of a number of other companies; and at one time had a well with a small pumping production. This production was unique in the Turner Valley Field, in that unlike the light gasoline oils usually encountered, it approximated in quality the Pennsylvania product.

Okalta Oil Co. with W. S. Herron as managing director has located a test on the east half of Section 1-20-3w5, close to the Illinois-Alberta No. 1, and in the same half-section as the McLeod wells.

East Central Alberta

In east central Alberta, Irma Oil Development Co., Section 28-45-9w4, has been having a lot of difficulty owing to a seam of heaving sand and boulders. The sand rose in the hole as fast as the drill removed it, and it was necessary to secure a string of 10-inch pipe to shut off the sand. When the pipe was finally

(Continued on Page 122)



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Storm Results in Big Drop in Output

Gulf Coast Area Swept Second Time With Heavy Damage Sustained by Oil Companies. South Liberty Hit Hardest

By P. L. McGreal
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Apr. 5.—A wind storm that at times reached proportions of a hurricane swept the Gulf Coast region Tuesday morning. About 500 wooden derricks in the pools east of Houston and wildcat wells were demolished, suspending operations for a time. The Gulf Production, The Texas Company, Humble Oil & Refining Co., Sun Oil Co. and Galena-Signal Oil Co. of Texas were the heaviest losers. The total loss is estimated at $1,250,000, divided among derricks lost, pumping production partially suspended and extra expense incident to repairing the damage.

Two men were killed and one injured in the South Liberty Pool. A. P. Brown and John Kelly, employes of the Peer Oil Co. were caught under falling derrick timbers and crushed to death and J. B. Roberts, another employe, seriously injured.

The greatest danger was in the South Liberty Pool, where almost every derrick went down. Heavy losses were sustained in the Goose Creek, Humble, Hull, Sour Lake, Spindletop and Orange districts. The losses at Blue Ridge, Pierce Junction and Vinton, (La.) were less severe in proportion to the number of derricks in those places.

It is estimated that practically 80 per cent of the wooden derricks over pumping wells will be replaced with steel.

As a result of the demoralized condition in the pools, the estimated daily average production for the week ending April 3, shows a loss of 14,120 bbls. compared with last week.

The estimate for each district is as follows:

District—	Gross Bbls.
Boling	1,400
Batson	1,450
Blue Ridge	620
Barber Hill	105
Big Creek	1,100
Dayton	60
Damon Mound	875
Edgerly, (La.)	800
Goose Creek	8,200
Humble	4,000
Hull	19,200
High Island	125
Jennings, (La.)	1,200
Lockport, (La.)	4,500
Markham	75
Nash	225
Orchard	170
Orange	11,000
Pierce Junction	1,300
Piedras Pintas	1,100
Spindletop	2,000
Saratoga	1,300
Sour Lake	4,370
South Liberty	5,000
Vinton, (La.)	6,600
West Columbia	9,080
Welsh-Anse La Bute	80
Miscellaneous	110
Total	86,045

Southwest Fields

A decline of 175 bbls. is noted in the southwest fields. The estimate is as follows:

Field—	Gross Bbls.
Luling	21,900
Laredo	3,380
Somerset	2,250
Calliham	220
Rockdale-Minerva	930
Jim Hogg County	3,170
Lockhart	6,975
Total	38,925
Grand total for week	124,870
Grand total last week	139,165
Net decrease	14,295

Week's Completions

Wells completed during the week number 14, of which 3 were dry and 1 salt water producer. The new production aggregated 6,310 bbls. Four wells are bailing at the close of the week.

The best completion was the Empire Gas & Fuel Co.'s No. 18 Barngrover in the Hull Pool, flowing 2,500 bbls. initial at 3,200 feet.

The Gulf Production Co. completed No. 3-A Chesson in the Orange Pool at 4,650 feet, flowing 1,800 bbls. initial. The Texhoma Oil Co. (Continental) abandoned Nos. 4 and 14 Chesson there at 3,050 and 4,760 feet respectively and is bailing No. 10 Chesson at 4,750 feet. The Humble Oil & Refining Co.'s No. 5 Myers is bailing at 3,225 feet.

The Lockport district in Calcasieu Parish, Louisiana, registered its fourth well in two weeks. The Vacuum-Gulf Co.'s joint No. 2 Friedberg and Wolf, a work over, is flowing 1,200 bbls. at 3,110 feet. The same interests' No. 2 Bordages, a recent completion, is flowing 700 bbls. of fluid, 40 per cent sediment and water. It came in at 3,780 feet and extended the limits of the territory 2,000 feet northwest.

In the Vinton, (La.) Pool, the Gulf Refining Co.'s No. 3 F. H. Gray is flowing 300 bbls. at 1,650 feet. The Gulf Refining Co. abandoned No. 65 G. N. G. at 2,500 feet.

In the Jennings, (La.) Pool, the Port City Oil Co.'s No. 5 F. F. S. is a 200-bbl. producer at 1,700 feet.

In the Edgerly (La.) Pool the Lake Charles Oil Co.'s No. 5 Fairchilds was worked over into a 40-bbl. pumper at 2,775 feet.

In the Goose Creek Pool, the Humble Oil & Refining Co.'s No. 23 Peninsula is pumping 40 bbls. at 3,500 feet. The Gulf Production Co.'s No. 5 Wright will make a pumper at 1,900 feet. The Gu'f Coast Oil Corp.'s No. 24 Galliard is bailing at 2,800 feet.

In the Batson Pool, the East Batson Oil Co.'s No. 12 State land, is pumping 100 bbls. at 1,125 feet and the Sterling Oil Co.'s No. 3 Hooks is a salt water well at 1,700 feet.

In the Sour Lake Pool, the Barclay Oil Co.'s No. 1 Bailey is bailing at 1,600 feet and the Minor Oil Co.'s No. 72 fee, is pumping 30 bbls. at 1,150 feet.

In the deep sand section of the Piedras Pintas Pool in Duval County, the Humble Oil & Refining Co.'s No. 5 Walsh is in sand at 2,602 feet. No. 4 Walsh, the deep sand discovery well on the east edge of the dome, got the pay at 3,620 feet last December. No. 5 is about 250 feet south from No. 4 Moody and Seagraves' No. 1 Walsh, 500 feet from No. 4 Walsh, is also in sand at 3,594 feet.

Boling Pool

Conditions in the new Boling Pool are are not any more encouraging this week than they were last week. The Texas Company's No. 3 Taylor, the original producer, which was on air making around 200 bbls. per day, has "gone dead" again. The other producers there are slipping, so that the daily average for the week is less than 1,500 bbls. The Gulf Production Co. is trying out the territory on the northeast and is starting No. 1 Mick, located 1½ miles northeast of the present producing area. The Vacuum Oil Co.'s No. 1 Hooper, west of production, is drilling around 3,700 feet, or 340 feet deeper than where the sand was found in the original well. No. 2 Hooper is at 1,545 feet. Murchison & Fain's No. 2 Mullens is a location and J. K. Hughes Development Co.'s No. 1 Mullens is drilling around 1,235 feet. It is west of the Hooper.

On its Taylor 400-acre lease on which the first well was developed, The Texas Company's No. 5 is around 3,300 feet and No. 7 is below 3,800 feet. No. 1-B Floyd is drilling below 1,700 feet. The Sun Oil Co.'s No. 2 Taylor strip is working over. No. 3 is at 3,519 feet and No. 4 around 3,490 feet with No. 5 at 3,090 feet. Locations have been made for Nos. 6, 7, 8, 9, 10 and 11. The Atlantic Oil Producing Co.'s No. 2 Taylor strip is sidetracking at 2,135 feet. No. 3 is fishing. No. 4 is shut down. The Sinclair Oil & Gas Co.'s No. 2 Taylor is working over. No. 3 is drilling below 3,500 feet; No. 4 at 3,670 feet and No. 5 around 3,175 feet. A derrick is up for No. 6. The Oxford Oil Co.'s No. 2 Floyd is drilling around 2,775 feet and No. 3 below 1,765 feet. The Humble Oil & Refining Co.'s No. 2 Hawes, northeast of production, is drilling around 2,980 feet and No. 3 Hawes is at 1,900 feet. No. 4 is shut down. No. 5 is around 2,235 feet and No. 6 at 2,435 feet, both drilling ahead.

In the old section of the South Liberty Pool, the Humble Oil & Refining Co. was drilling No. 1-B Deussen at 235 feet. The Sinclair Oil & Gas Co. was working over No. 3 Condit and the Associated Oil Co. was rigging No. 2 Deussen. In the extension on the east side of the Trinity River, the Humble Oil & Refining Co. was rigging No. 2 Welder. The storm and high water in the Trinity River has caused a cessation of all drilling there.

Orange Pool

The Gulf Production Co.'s men in the Orange Pool made a record in clearing away the debris from last week's storm there. The company lost about 20 derricks on the morning of March 25. In two hours derrick builders were moving and during the afternoon electricians had connected broken power lines and had the wells on one lease pumping. All the pumping wells of the company were on temporary jacks the next morning. The flowing wells were not shut in.

The Humble Oil & Refining Co.'s No. 25-A Chesson is around 5,100 feet. The Kishi Development Co.'s No. 7 McQuire is around 4,900 feet. The Rycade Petroleum Co.'s No. 2-B Cow Bayou is around 4,800 feet and No. 6 is around 4,700 feet. A location has been made for No. 8. The Orange Petroleum Co.'s No. 11 Williams is drilling around 5,010 feet. The Texhoma Oil Co. is preparing to deepen No. 4 Chesson from 4,710 feet.

Hardin County Pools

The Saratoga Pool lost 206 derricks, as follows: Sun Oil Co., 50; Rio Bravo Oil Co., 45; Paggi Brothers Oil, 23; Gulf Production Co., 21; San Bernard Oil, 20; Weldon Oil, 28, and E. W. Skinner, 10. In addition, 19 over abandoned holes went down.

The Gulf Production Co. is rigging No. 166 Wing at Batson, where the loss of derricks was also very heavy.

At Sour Lake, the Humphrey Corp.'s No. 2 Griffith is around 1,135 feet, with No. 1 rigging and a location for No. 2. The Texas Company's No. 230 fee is at 1,300 feet. The Yount-Lee Oil Co.'s No. 3 Gilbert is around 3,350 feet. The Lake

(Continued on Page 128)

WILDCATTING IN NORTHWEST STATES; WASHINGTON, IDAHO AND OREGON

By F. B. Taylor
Staff Correspondent, Rocky Mountain Area

CASPER, Wyo., Apr. 3.—Casper oil firms are turning some attention to the states west of Wyoming and Montana this spring. The New York Oil Co. has already selected a structure near Aberdeen, Wash., and is drilling a test there. Other companies have geologists examining territory in Idaho, Oregon and Washington.

One of the best prospects so far discovered is a structure in the Harney Basin of Oregon, according to reports sent back from the investigators. This area lies near Burns, Ore., and extends from Burns south to Catlow Valley. An anticlinal fold on this structure lies about 5 miles west of Burns, with dips of 3 to 4 degrees and the strike along the flank running about 70 degrees west. This is a plunging structure. A second structure appears north of Diamond, but this dome is somewhat covered with lava beds so that its survey cannot be completed from surface indications.

Near Dog Mountain, in this area, another structure occurs and has had one well drilled on it in Section 19-25-31 that found showings of a paraffin base crude and this test went to 3,750 feet. The Fidelity Oil Co. also put down a test on Section 5-26-33 in this area and found showings of both oil and gas, the latter being enough to light and burn.

It is considered upon close examination of the Dog Mountain well that this hole may have found oil in commercial quantities when it was drilled without the fact becoming known. When this well stopped drilling, it had reached a sand that showed gas through 3,600 feet of water and with this column of water on any sand the water would drive back any oil that the sand might contain. The Dog Mountain well never secured a water shut off during its drilling.

Showings of oil or gas are numerous over the whole Northwest, in water wells and springs and in seepages. Near Klamath Falls, about three years ago, a showing of oil in a well was large enough to cause oil men to state it would make a commercial producer, but later tests failed to open a field there. Several of the Geological Survey bulletins describe the showings found in various parts of the country.

To Drill in Montana

Julius C. Peters announced at Great Falls, Mont., that the Summit Oil Co. of New York and Detroit, recently organized, was to enter Montana this season and drill wells in the wildcat districts. Mr. Peters has organized several prominent oil firms now operating in that state and, according to his statement, the Summit Oil Co. has sufficient backing to insure its operations for several years.

The Montana Railroad Commission has made public the pipe line figures for the month of February. Sunburst Field easily led all others in the state and the Illinois Pipe Line Co. handled all the production from that field. The total amount was 369,024 bbls. which was sold to different firms as follows: International Refining Co., 118,127 bbls.; B. S. Aronow, 969 bbls.; Arro Oil & Refining Co., 965 bbls.; Sunburst Oil & Gas Co., 66,222 bbls.; Alberta Refining Co., 4,219 bbls.; Imperial Oil Co. for its Regina refinery, 115,658 bbls.; Maple Leaf Oil & Refining Co., 25,982 bbls. This makes a total of 332,145 bbls. shipped to refining plants outside the field.

The Illinois Pipe Line Co. had in storage at the close of February, 15,531 bbls. and was holding in storage for others a total of 293,133 bbls. Also it had capacity for 102,000 bbls. of oil more than was empty at the close of the month.

(Continued on Page 137)

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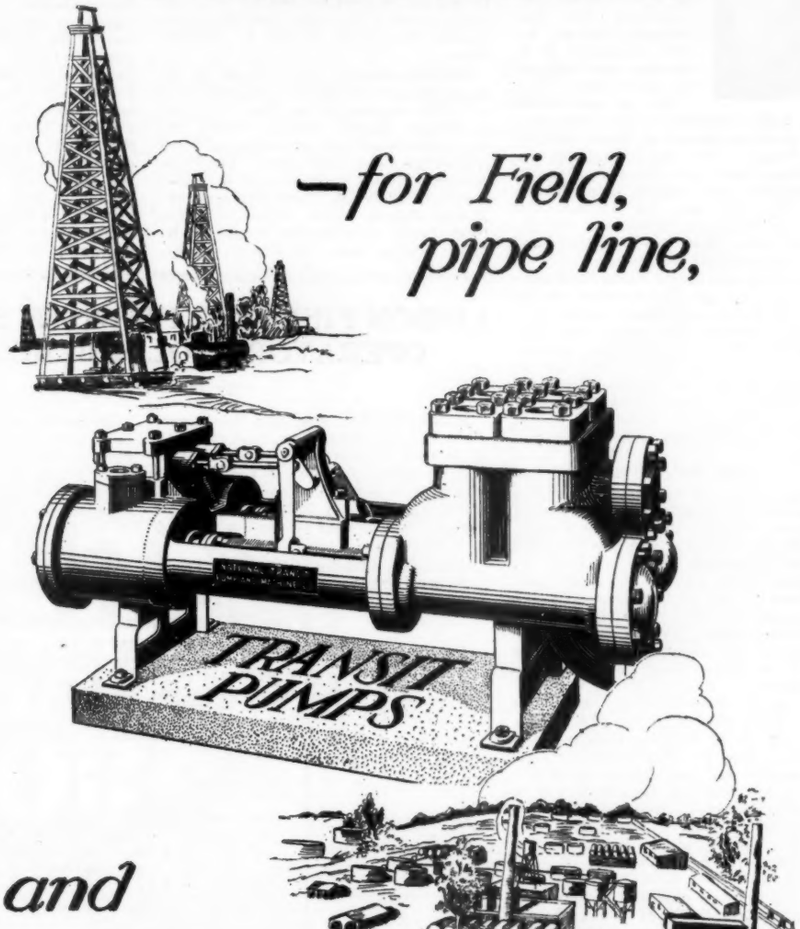

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Southeast Ohio Most Promising in East

Southwest Pennsylvania Did Not Have Barrel of New Production for Month. Clay County, West Virginia, Busy

By D. S. Wakenight
Staff Correspondent, Eastern Fields

PITTSBURGH, Pa., Apr. 5.—Since the eastern fields were last reviewed a good many wells were completed with no notable producers. There is still room in many of the old fields capable of furnishing light producers. The best probable source for new production is in the deep sand territory in southeastern Ohio.

All of the worth while wells completed in the West Virginia fields are located in Henry district, Clay County. The South Penn Oil Co. completed three wells, located on the O. D. Stockley farm, ranging in production from 20 to 30 bbls. In the same district, the Virginian Gasoline & Oil Co. completed No. 11 on the J. B. Casto 260 acres and got a 20-bbl. producer.

The southwest Pennsylvania fields completed no producers and rounded out the month of development work without furnishing a barrel of new production. This is the first time in a great many months that the southwest fields went through an entire month without supplying some new production. Last month the Gordon sand pool in Morris Township, Greene County, furnished 995 bbls. of new production.

Late Completions

In rounding out the week of development work few completions were reported from any section. In Paw-Paw district, Monongalia County, the South Penn Oil Co. drilled its old No. 3 on the A. F. Conaway farm, an old Big Injun sand producer, to the Bayard sand. It is a fair gasser at a total depth of 3,215 feet. In Union district, Tyler County, D. E. Sanders & Co. completed their test on the N. A. Hays farm. It is dry and abandoned.

In Henry district, Clay County, the South Penn Oil Co. has completed No. 13 on the O. D. Stockley farm good for 35 bbls. a day; No. 15, showing for a 15-bbl. pumper, and No. 14 good for 20 bbls. Within the next few days there will be several wells due in the sand. The production of the pool is increasing. There are 12 wells drilling and 7 rigs up. The next due is the South Penn Oil Co.'s important test of the R. S. Kyle farm. If this well proves a producer it will extend the producing limits of the pool. In Union district, the Empire Petroleum Co. has the rig completed for a test on the J. H. Samples farm.

In Union district, Ritchie County, O. O. Henry has a gasser in the Big Injun sand at a second test on the W. R. Brown farm. In the same district, O. S. Young has a gasser in the same formation at a test on the C. W. Townsend farm. In Center district, Gilmer County, the McCall Oil & Gas Co. has drilled tests to the lower sands on the Jesse Davis and Floyd Moore farms. Both are dry in the lower sands. In Big Sandy district, Kanawha County, the South Penn Oil Co.'s test on the Lincoln Dodd farm is a gasser good for 465,000 feet in the Berea grit.

Putnam County

On the waters of Poplar Fork, Scott district, Putnam County, the Charleston-Dunbar Natural Gas Co. completed in the salt sand a test on the Gabe Smith farm good for 20 bbls. a day. The location is only 120 feet south of the second test on the Elizabeth Griffith farm. In this locality there is some new work starting. The Scott Oil Co. has started to drill a test on the E. A. Taylor farm. The Teays Producing Co. is drilling a second test on the Fannie J. Simms farm. Kirtley & Kirtley have the rig completed and started to drill a test on a part of the same farm.

On Green Creek, Walton district, Roane County, the South Penn Oil Co. has drilled a second test on the G. L. Summers farm through the Berea grit. It is a gasser good for 500,000 feet. In Curtis district, the Ohio Fuel Oil Co. is drilling No. 9 on the C. C. Walters farm.

In Union district, Tyler County, D. E. Sanders & Co. are due in the Keener sand at a test on the N. A. Hays 30 acres. In Church district, Wetzel County, the Round Bottom Oil Co. is drilling at 1,200 feet on the Lewis heirs farm. The Hope Natural Gas Co. is drilling at the same depth on the W. M. Himelrick farm. In Meade district, Tyler County, Albert Neely has a rig completed on the G. K. Morgan heirs farm. In Center district, Wetzel County, the Hope Natural Gas Co. has started to drill on the F. E. Miller farm. The Myers Oil & Gas Co. is due in the Big Injun sand at a test on the J. K. Long farm.

Duster in Roane County

On Green Creek, Harper district, Roane County, the Central Gas Co. has completed through the Big Injun sand a test on the W. W. Smith farm. It is a duster. In the same district, the Big Injun Oil Co. has the rig completed for a test on the P. Painter farm. In Walton district, the South Penn Oil Co. is fishing at 2,500 feet at a second test on the G. L. Summers farm. In Reedy district, the Heck Oil Co. is due in the Big Injun sand at No. 3 on the D. H. Burroughs farm. In Lee district, Calhoun County, the Hope Natural Gas Co.'s test on the Samuel Husk farm is a very light pumper in the Maxon sand. In the same district, M. F. Crowley has the rig completed for a test on the Charles Summers farm. In Sheridan district, Crowley & Co. have a rig completed on the C. J. Thomas farm.

In Union district, Ritchie County, the Carnegie Natural Gas Co.'s second test on the Smith heirs farm is a gasser in the Big Injun sand. In the same district, the Valley Oil & Gas Co. has the rig completed for a test on the Daisy Cox farm.

In Lincoln district, Marion County, the Owens Bottle & Machine Co. drilled down to the Bayard sand old No. 1 on the E. R. Freeland farm. It is a gasser in the lower formation. In Clay district, Monongalia County, Lutton Brothers drilled to the same formation old No. 2 on the Cook heirs farm, a gasser. In Harper district, Roane County, W. W. Smith & Co. have now drilled through the Big Injun sand at a test on the W. W. Smith farm. It is dry and abandoned.

On Fish Creek, Liberty district, Marshall County, the Manufacturers Light & Heat Co. has a 5-bbl. pumper in the Gordon sand at a test on the T. and S. Blake farm. In Collins Settlement district, Lewis County, the Coburn Oil & Gas Co. has drilled a test on the H. C. Ramsey farm through the fifth sand and dry.

Gassers in Lincoln County

In Union district, Lincoln County, C. C. Wolfe has a gasser in the Berea grit at a test on the George Hudson farm. In the same district the Cambridge Gas Co.'s No. 3 on the Asa McCallister farm is a gasser in the same formation. In Carroll district, A. F. Morris' test on the Scott Lawson farm and L. R. Sweetland's test on the T. H. and W. R. Lockwood farm are gassers.

In Curry district, Putnam County, the Grant Gas Co.'s second test on the John S. Burdette farm is a gasser in the Big Injun sand. In Grant district, Cabell County, the Minickel Gas Co.'s test on the T. L. Brown and R. R. Ball farms are gassers in the Big Injun sand. Each is good for 200,000 feet.

In West Union district, Doddridge County, C. H. Pigott has a 6-bbl. pumper in the Big Injun sand at No. 3 on the C. Williams farm. In Greenbrier district, the Hope Natural Gas Co.'s No. 3 on the Benjamin F. Hefflin farm is a gasser in the 30-foot sand. In Skin Creek district, Lewis County, the Pittsburgh & West Virginia Gas Co.'s test on the D. P. Linger farm is a gasser in the Gantz sand.

In Carroll district, Lincoln County, the Transylvania Petroleum Co.'s second test on the L. R. Sweetland farm is a fair gasser in the Berea grit. In the same district, the Laurel Development Co. has a gasser in the same formation at No. 3 on the B. B. Jaynes farm. In Duval district, the Grant Gas Co.'s second test on the T. F. Nelson farm is a gasser.

Marshall County

In Liberty district, Marshall County, the Hope Natural Gas Co. has drilled down from the Big Injun to the Gordon sand its old No. 1 on the J. H. Yohe farm. It is a fair gasser in the lower formation. In the same district, W. A. Evans & Co. have a duster in the same formation at a test on the W. E. Parriott farm. The Decem Development Co.'s No. 4 on the W. A. Evans farm is a gasser in the Gordon sand.

On the waters of the Kanawha River, Sheridan district, Calhoun County, L. B. Carroll has drilled a second test on the Hagan Barr farm through the Berea grit. It is a gasser good for 500,000 feet. The location is 1,000 feet southwest of G. L. Cabot's No. 5 on the B. B. Ferrell

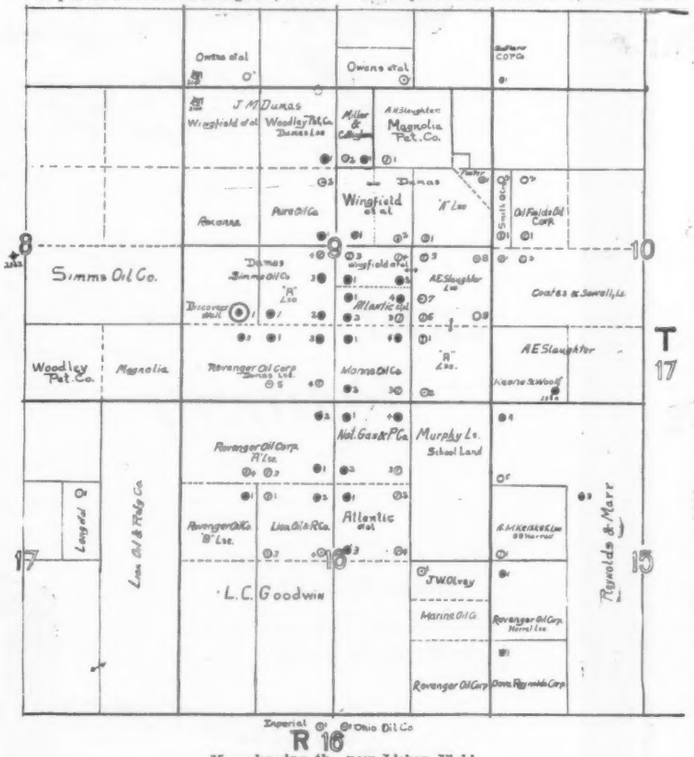
(Continued on Page 116)

LISBON FIELD ACTIVE WITH SMALL OPERATORS HOLDING BEST ACREAGE

By James H. Dameron

SHREVEPORT, La., Apr. 3.—In territory frowned upon by the vast majority of oil men for years, the Lisbon Pool in Union County, Arkansas, is the most recent area to upset the "dope" of the oil fraternity and today it is bidding fair to have its daily average production recorded in five figures.

The pool is situated in Range 16, Township 17, and is producing in Sections 9, 16 and 15, with Section 10 beginning to crowd in. Apparently the pool is fairly well defined on the east and west and three important tests, one to the northeast and the other two south, will probably tell the length of the pool.



Map showing the new Lisbon Field.

Production is coming from the Nacatosh sand, found around the 2,100-foot horizon, and its approximate average thickness is 20 feet. The oil averages 37 degrees. On March 25, Lisbon had 27 wells producing 4,665 bbls. of oil daily, or an average of 172 bbls. to the well.

The heart of the field is in the southwest quarter of Section 9, and all but 50 bbls. of the field's production is coming from wells in Sections 9 and 16. The area is being rapidly developed.

Pipe Line Facilities

Three pipe line companies have extended lines into the field. The Shreve-

(Continued on Page 104)

Wheels that stay NEW

THE use of Moore Steel Bull, Band and Calf Wheels has expanded by leaps and bounds. For Several years, our shops were unable to keep up with the demand. Since the recent completion of a large new plant at Pittsburgh, our production and shipments have been more than doubled. To us these simple facts seem to be the best possible evidence of the universal satisfaction given by Moore Wheels in particular, and of the economy of steel versus wood wheels in general. For the heaviest service and longest life, there is nothing like a Moore Steel Wheel.

Bull Wheels
Band Wheels
Calf Wheels
Steel Tug Rims

Lee C. Moore & Co., Inc.
Oliver Building - Pittsburgh, Pa.

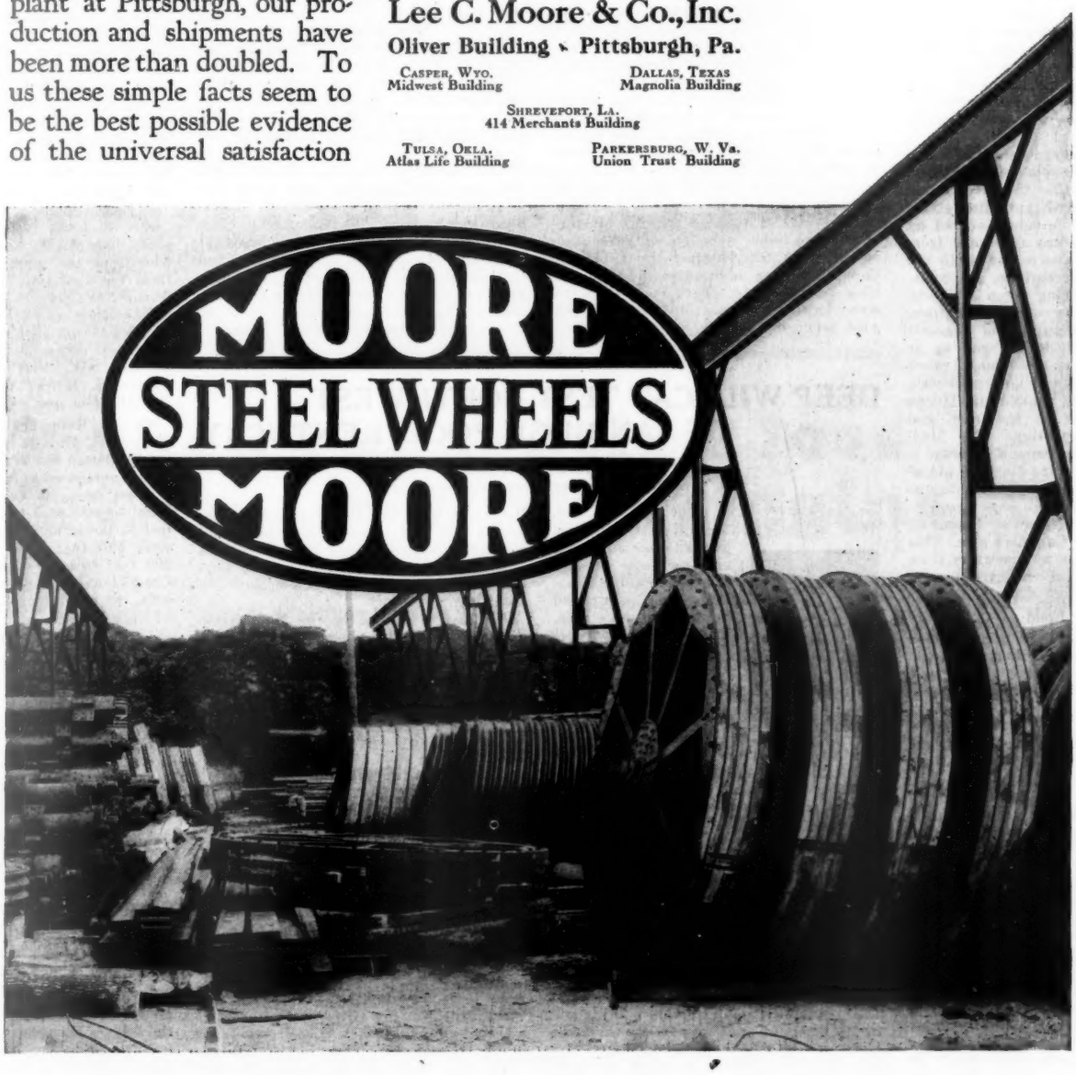
CASPER, WYO.
Midwest Building

DALLAS, TEXAS
Magnolia Building

SHREVEPORT, LA.
414 Merchants Building

TULSA, OKLA.
Atlas Life Building

PARKERSBURG, W. Va.
Union Trust Building



New Well Extends Saginaw, Mich., Field

Bliss Petroleum Completion May Be Followed This Week By Sun Oil Co. Still Farther North From Production

By Whit
Staff Correspondent, Central West Fields

FINDLAY, Ohio, Apr. 5.—Improved weather conditions have brought out the operator who has been awaiting the spring season and much leasing is being done in all parts of the Central West Field, on the north side of the Ohio River and extending north through Ohio, Indiana, Illinois and Michigan. This leasing is taking place in old defined territory which was abandoned a few years ago; on the outer edges of producing areas and some miles away from spots that were never looked upon as probable producing areas. It shows they are anxious to drill, even if they have to wildcat it. The Saginaw, Mich., Field is looking better every day. The bringing in of the Bliss Petroleum Co.'s well, in advance to the north of the discovery well on the Saginaw Prospecting Co., added quite a scope of almost sure territory and now the trade is closely watching the outcome of the test farther to the north being drilled by the Sun Oil Co., and due for completion at most any time.

Large blocks of acreage are being leased in the Upper Peninsula of Michigan, where geologists claim to have found some very pronounced anticline structures. This acreage is being secured by Mid-Continent producers and some from farther west. How far to the north the Saginaw Field will continue is problematic. Acreage is being taken in blocks in Bay County to the north of Saginaw County. If the structure from Saginaw runs to the northeast it will end up at Saginaw Bay as far as development work is concerned, but there is now some talk of leasing in Tuscola, Sanilac and Huron Counties which line to the east and southeast of Saginaw Bay. The Marl Bed country of Rosecommon County is another spot that is attracting the attention of the western scouts. Back in the latter '90s showings of oil were found in wells drilled on Michipicoten Island in Lake Suprior, on the Canadian side. This development was done by operators from Toledo, during the great drilling campaign in the old Trenton Rock fields of Ohio.

Lima Field

The old Lima Field of northwestern Ohio is in for an active drilling campaign. It will furnish small producers that count up in the aggregate and operators pronounce a field a substantial one when production is bringing between $1,500 to close to $2,000 per barrel, which means settled wells regardless of the smallness of the production.

New drilling wells to a great extent go much deeper in the Trenton than was the case some years ago and good producers have been found as there are several pay spots known to exist in some parts of the large field. More pays are found in the Trenton along the "Sucker Rod" or "Hog Back" strip passing through Hancock, Wood and Lucas Counties.

The finding of commercial wells at a depth close to 2,000 feet and in the Trenton near Port Clinton on Catawba Island, in the eastern part of Ottawa County, may bring about a large amount of test work, as the Trenton Field proper and the Catawba wells are almost 20 miles apart and nearly every available acre has been leased during the last fall and winter. The wells are only ordinary pumpers around 20 bbls., but show there are possibilities in the wide territory for more productive ones, especially if a crevice well is found.

Paulding County, where the Payne Field is located and one of the newer fields of the Lima Field, failed to complete any new wells during the current year as the roads have been such it was impossible to move materials, but the next few weeks should show a renewal of activity not alone in the Payne Field proper but across the state in Maumee Township, Allen County, Indiana, where a few nice producers were found last year. This is north of the old field.

In the south side of the old Trenton Rock Field proper there are still great opportunities for the operator looking for medium-sized producers. The Roundhead Pool, in McDonel Township, Hardin County, now has the call in that direction, and while the sand is found at between 1,400-1,500 feet, the wells run as high as 100 bbls. flush although the majority show less than half that amount of production. Shelby County, on the south flank, is another spot where a renewal of operations will be noticeable within a very short time and Darke County as well. Around the town of Mendon, in the northern part of Mercer County, is another spot attracting attention, but the newer wells now being found are on what was supposed to be a dry area between production. Mack P. Colt, it appears, likes to run up against that kind of acreage and did with the result that he has secured a nice production on supposed worthless territory. During the past couple of months, N. E. Masters of Chicago, who, a couple of years ago, operated in the Hotmier Pool in Jay County, Indiana, secured some acreage in close proximity to where the Colt wells were located and has drilled in a few good producers.

In the Hardin County area the Boston-Southwestern Oil & Gas Co., formerly operating in the South Weir Field of Magoffin County, in the Big Sandy Valley area of eastern Kentucky, has secured a large acreage in Hardin County, south of Findlay and drilled in some good wells, in fact the Roundhead territory is the most productive found in the Trenton Rock area at this time. This county is in for a large amount of development during the year. W. P. Schmidt, Roundhead, pioneer in this district, having been one of the first operators to start work in the Roundhead territory, has been instrumental in organizing and developing a number of companies and leases and has controlling interest in several of the large producing companies in the field. Having watched the field development for a number of years, he says there is every indication that oil operations will be carried on a much larger scale this summer than ever before.

New Completions

In Wood County, Henry Township, the Ohio Oil Co.'s No. 29 well, 850 feet from the south line and 1,320 feet from the east line of the F. Bealer, Section 33, pumped 24 bbls. flush, with Trenton topped at 1,193 feet and drilled 175 feet in the sand.

The Ohio Oil Co.'s No. 11 well, 200 feet from the south line and 1,185 feet from the east line of the John E. Moorehead north farm, Section 22, Portage Township, Hancock County, pumped 11 bbls., top of Trenton at 1,313 feet and total depth 1,363 feet. In Liberty Township, same county, the Baseline Oil Co.'s test in the northeast corner of the E. Crow farm, mapped as the Z. Bishmin, NE, Section 32, pumped 5 bbls. Sand top found at 1,285 feet and drilled 65 feet in.

The Gwinn Oil & Gas Co.'s No. 5 well, 850 feet from the south line and 550 feet from the west line of the John A. Beerman, in the SW, Section 23, Spencer Township, Allen County, pumped 12 bbls. Sand was struck at 1,197 feet and total depth 1,242 feet.

A dry hole was drilled by E. B. Jack and others, 1,800 feet from the north line and 800 feet from the west line of the Henry Steve farm, NW, Section 4, Washington Township, Auglaize County.

A 9-bbl. flush pumper was struck by the Ohio Oil Co. in No. 5, located 700 feet from the north line and 300 feet from the west line of the Henry Kinker, Section 30, Washington Township, Sandusky County, top of Trenton at 1,266 feet and drilled to a total depth of 1,368 feet.

Three completions are reported from Shelby County. In McLean Township, the Wittmer property trustee's test, 900 feet from the south line and 300 feet from the east line of the Frank Ernst, in the SE, Section 11, pumped 2 bbls., with sand struck at 1,277 feet and oil at 46 feet in the sand. In Cynthian Township, same county, the same company's No. 4 well, 300 feet from the south line and 1,950 feet from the west line of the Joe Siegel, pumped 15 bbls. at a total depth of 1,362 feet, or 45 feet in the sand. Lee A. Watson's No. 4 well, 2,105 feet from the north line and 300 feet from the west line of the Felix Grilliox, in the NW, Section 31, pumped 5 bbls.

The Recovery Oil & Gas Co. drilled in a 100,000-foot gas well at a test in the southwest corner of the J. N. Losha farm in the SW, Section 27, Washington Township, Mercer County; top of sand at 1,150 feet and gas at 40 feet in.

In the Roundhead Field of McDonel Township, Hardin County, the Boston-Southwestern Oil & Gas Co.'s second well in the northwest corner of the George W. Strawn farm, is credited with 32 bbls. Sand topped at 1,443 feet and drilled 44 feet in the sand. Same company's fourth well, 510 feet from the south line and 290 feet from the east line of the Mary Clark Irwin farm, showed a flush of 35 bbls., with sand at 1,445 feet and oil at 47 feet in the sand.

New Work Under Way

North of North Baltimore, in Henry Township, Wood County, the Trail Oil Co. is drilling No. 5 on the John Cahill farm, Section 24. In Liberty Township, the Ohio Oil Co. is drilling No. 13 Caleb Mercer, Section 12, and the Queen Oil Co. is working at its second well on the George Borders, Section 4. The Oko Oil & Gas Co. made locations for No. 2 Grace Dauer, No. 8 A. H. Lindemier and No. 3 Louisa DeVerna and has a rig up for No. 4 George DeVerna, all in Perrysburg Township.

In Allen County, Bath Township, Charles Geselchen and others are drilling No. 4 William Lenny, Section 12, and O. T. Botkins and others have a rig up for a second test on the P. D. Driver, same section.

In Auglaize County, Moulton Township, Kelly Brothers are working at a test on the Joseph Harshbarger, Section 10. Vossless Oil Co. is drilling a test on the Fred Koch, Section 16, Douchouquet Township, while the Rock Oil Co. has a rig in for a test on the Clemens Enneking, Section 24, Jackson Township. The Bachelor Oil Co. has a rig up for No. 9 in the William T. Seibert, Section 3, Salem Township.

In Center Township, Mercer County, Mack P. Colt and others are at work at

(Continued on Page 113)

DEEP WILDCAT TEST NORTHWEST OF SANDIDGE POOL, KENTUCKY

By Vern T. Whitney
Staff Correspondent, Kentucky-Tennessee

GLASGOW, Ky., Apr. 5.—The past week in the Kentucky-Tennessee fields was another quiet one and no wells of any size or of unusual interest were completed in the Kentucky area. The largest well is credited to the Swope Pool, of Ohio County, good for 25 bbls. in the Barlow sand. In the Kettle Creek Pool, Monroe County, McClintock and others' No. 12 Bud Kerr, which produced 1,000 bbls. from the Sunnybrook formation at 525 feet before it quit pumping, is being deepened to the pays below the Pencil Cave, topped at 540 feet. The test that is being drilled by F. F. Blanchard on a block of acreage 3 miles northwest of the famous Sandidge Pool in Warren County, is being watched very closely by scouts as it is in virgin territory and located on a well-mapped structure. This is really the first wildcat that has been started in Warren County for two years and if it proves a producer it will probably result in more attempts being made in its direction and may result in some test work farther on to the north in Edmonson County where good oil showings were found several years ago. It is thought that the shallow sand which is productive in the Sandidge Pool will be found in the test now drilling, which will mean a large extension to that pool, but the operator has contracted for a deep test which makes it all the more attractive. E. M. Treat and others, the Belvedere Oil Co., the Lincoln Oil Producing Co. and several other producing companies have obtained acreage in this section of Warren County and are anxiously awaiting the completion of Blanchard's venture.

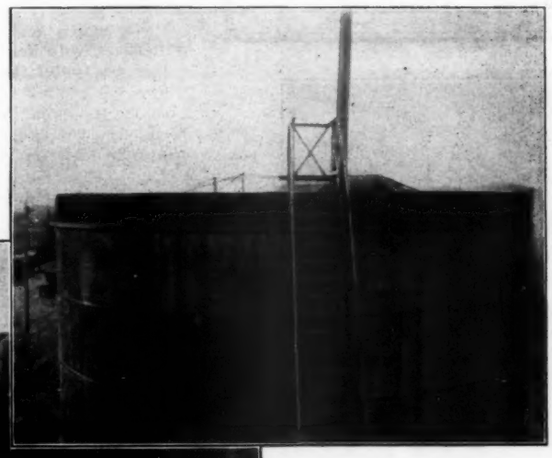
All that is needed in the Blue Grass State to bring its production up, according to numerous geologist, is a vigorous wildcat campaign and with the present oil prices there is no reason why a goodly number of tests should not be made. Kentucky as well as Tennessee has merely been scratched and if some of the large oil companies will start the ball rolling instead of waiting for the individual to go ahead, as they have in the past, much can be expected in the way of opening new pools and extending older producing areas during the present year.

Tennessee Wildcat Showing

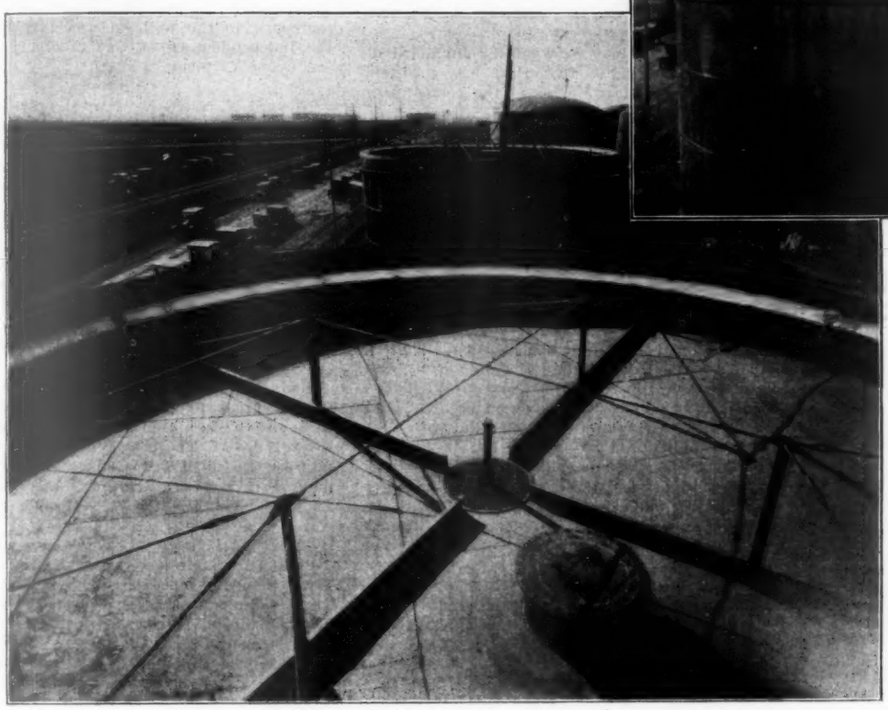
According to reports, the Tennessee Stave & Lumber Co.'s test on the Tan Bark, on Wolf River near Pall Mall, in Fentress County, is showing for from 5 to 10 bb's. naturally at a depth of 2,074 feet, 1,528 feet below the black shale, in what is thought to be the Trenton Rock formation. Arrangements have been made for the shooting of the well and it is thought that it will result in increasing the oil flow. A test of the oil showed to be of 42 degrees Baume. Grover Cox, the contractor, is greatly enthused over the strike and is of the opinion that a pool of considerable magnitude has been opened.

The test now being drilled on the W. A. Pyle farm, adjoining the Alvin York place, by the Jamestown Oil & Refining

(Continued on Page 106)



Both tanks in the foreground are equipped with Wiggins Roofs—shown here riding at the top of the tanks. Note the substantial construction of the roofs and the effective manner they blanket and protect the oil. The flexible, gas-tight, fire-proof seal appears as the white band above the roof deck.



The tank shown here was filled with water in a test; with the tank overflowing the Wiggins Roof remains evenly and firmly in place. It cannot float off. Above the tank flange can be seen the roof shoe. As the roof moves, the shoe is held flat against the tank side. The shoes ride over rivet heads and seams and return to place against the tank side, exposing very little surface. And this is covered with a vapor blanket at the bottom of a 22-inch slot.

Save the evaporation loss —with Wiggins Roofs

SEALING the tank — gas tight — Wiggins Roofs reduce evaporation to a minimum.

The only oil surface exposed as the Wiggins Roof moves with the oil level is that beneath a narrow opening made when the roof shoe travels over rivets and seams. Even this small surface is blanketed by heavy vapors formed above it. Since the slot is 22 inches deep there is no air change over the surface and consequently no further evaporation.

Gas and air bubbles coming in with the oil are trapped by the flexible gas-tight seal and released, oil free, to the atmosphere, through a vent sealed with mercury.

There is no accumulation of vapor under a Wiggins Roof. Vacuum cannot pull it in. It cannot float off an overflowing tank. It is certain fire prevention and protection.

Write for literature describing the Wiggins Roof and data on what it is saving by reducing evaporation losses.

CHICAGO BRIDGE & IRON WORKS

CHICAGO, 2128 Old Colony Bldg.
NEW YORK, 3147 Hudson Terminal Bldg.
CLEVELAND, 2204 Union Trust Bldg.
DALLAS, 1641 Praetorian Bldg.
ATLANTA, 1054 Healey Bldg.
SAN FRANCISCO, 1054 Rialto Bldg.

The WIGGINS ROOF

KEEPS OIL IN - - - KEEPS FIRE OUT

OGJ 4-8 GRAY

PERSONAL PARAGRAPHS

Alexander Watts McCoy

The newly-elected president of the American Association of Petroleum Geologists is claimed by three states. Missouri, the "show me" state, has first claim upon Alexander Watts McCoy by virtue of the fact that he was born in Independence, February 6, 1889. He attended the grade and high schools of Independence and chose the University of Missouri for his collegiate training, graduating in 1912 with the degree of Civil Engineer. In 1924, he completed his work for a master's degree.

The next state to claim part of Mr. McCoy's allegiance is Oklahoma where he spent the 10 years following the completion of his college work. In 1914 and 1915, Mr. McCoy taught at the University of Oklahoma and in 1916 he was a member of the geological staff of the Marland Oil & Refining Company. From 1917 to 1920, he worked for the Empire Gas & Fuel Company at Bartlesville as geologist, and then went into business for himself as a consulting geologist with offices in Bartlesville.

The State of Colorado's claim upon Mr. McCoy dates from 1924 when he accepted the position of vice president of the Marland Oil Company of Colorado, the position he now holds.

Mr. McCoy was married in 1917 to Miss Helen Aylesbury and the couple have three children.

At the University of Missouri, Mr. McCoy was a member of the honorary engineering society, Sigma Xi, and belonged to Delta Tau Delta social fraternity. His favorite sport is tennis.

MEN KNOWN IN OILDOM

James G. Lyons, oil producer of Okmulgee, Okla., is spending some time in New York.

* * *

H. F. Keenan was recently reelected as a director of the Pacific Gasoline Company.

* * *

H. C. Bretschneider, vice president of the Midwest Refining Company, was a Casper, Wyo., visitor from Denver, Colo.

* * *

W. J. Hayes of the Ohio Steel Foundry Company, Springfield, Ohio, is making a tour of the Mid-Continent and Gulf Coast territories.

* * *

Newton Chapin, president of the Lee C. Moore Company of Pittsburgh, Pa., makers of tubular derricks, was a visitor in Tulsa last week.

* * *

George B. McCamey and J. P. Johnston left Fort Worth, Tex., the latter part of the week for New York on business. They will be in the East for a week or ten days.

T. L. Lewis, general sales manager of the A. M. Byers Company of Pittsburgh, Pa., is on a tour of inspection of the Mid-Continent oil fields.

* * *

R. E. Wertz, general manager of the Producers & Refiners, with headquarters at Parco, Wyo., was a business visitor the past week in Casper.

* * *

C. C. Hamilton, New York City attorney, has been elected president of the Sun Royalty Company of Oklahoma City, a new corporation.

* * *

W. A. Hanrahan of the Vacuum Oil Company has been transferred from Tulsa to Houston, Tex., and will work in the land department at that city.

* * *

T. S. Cook, general manager of the Standard of Indiana's Casper, Wyo., refineries, has returned from a trip to the main offices of the company in Chicago.

* * *

G. W. Mosley, in charge of White Eagle Oil & Refining Company operations in Texas with headquarters at Fort Worth, spent several days the past week on business in Cisco, Tex.

* * *

R. M. Johnson, of the land and leasing department of the Magnolia Petroleum Company, is on a vacation in the East. He will be away from his Fort Worth, Tex., office for a month or more.

* * *

C. F. Kelsey, manager of the Texas division of the Independent Oil & Gas Company, spent last week in the main offices of the company at Tulsa, and has returned to his headquarters at Fort Worth.

* * *

S. J. Davies, petroleum engineer in the Calgary office of the Geological Survey of Canada, has resigned and will enter into partnership with H. B. Pearson as a consulting geologist, with offices at Calgary.

* * *

Bert Thompson, well-known operator at Owensboro, Ky., was called to Indianapolis, Ind., to the bedside of his father-in-law, Mr. Smith, who is seriously ill. Mr. and Mrs. Thompson have returned to Kentucky.

* * *

W. C. Proctor, treasurer of the Magnolia Petroleum Company, is expected in San Francisco to close the tentative merger agreement between the Standard Oil Company and the General Petroleum Corporation.

* * *

W. T. Thom, Jr., geologist in charge of geology and fuels of the United States Geological Survey, has completed the delivery of a series of lectures at Princeton University on the geology of petroleum and coal.

* * *

William Cushing, now located in Houston, Tex., whose friends among pipe line men and producers extend from western Pennsylvania to the Pacific Coast, is in San Angelo, Tex., looking after business in the Big Lake Field.

* * *

Frank Brooder, manager of the Derby Dome Wyoming Oil Company, south of Lander, Wyo., was a visitor in Casper from the heavy snowdrifts that lie over that part of Wyoming at the base of the Wind River Mountain range.

* * *

J. J. Knowles, an officer of the Gillespie Oil Corporation, which has a refinery and filling stations at Gallantine, Tenn., and production in the Scottsville Field of Allen County, Kentucky, visited the Owensboro Field the past few days.

* * *

W. C. Williams has been placed in charge of the office scouting department of the Vacuum Oil Company, with Houston, Tex., headquarters. He was formerly connected with the engineering department of the Humble Oil & Refining Company.

* * *

H. G. James, secretary and counsel of the American Oil Mens Association, has left the Chicago headquarters for an enforced rest on the advice of his physicians. He plans to spend the six weeks that he will be absent in and around Kansas City.

* * *

T. B. Hoffer, president of the Hoffer Oil Corporation, Fort Worth, Tex., has just returned from an extended trip through the oil fields of Mexico. He was accompanied by Earle M. North, automobile dealer of Fort Worth. The trip took them as far as Mexico City.

* * *

H. E. Brandli, vice president and general manager of the Carson Petroleum Company, sailed for Europe April 3 to visit offices of the company at London, Liverpool, Antwerp and Paris. He was accompanied by Mrs. Brandli and will be gone three or four months.

* * *

J. C. Maxwell has just returned from an extensive stay in the oil fields of the far western part of Texas where he has considerable interests. He is interested in the well just recently brought in by the Independent Oil & Gas Company in southeastern Crane County.

* * *

Howard F. Nash, for several years general manager of the Empire Gas & Fuel Company at Tampico, Mex., left the first of the month for Wyoming. In Mr. Nash's place R. V. Whetsel who, for many years, has been assistant to the general manager, will remain in charge.

* * *

Arthur Drohen, purchasing agent for the Prairie Pipe Line Company, with offices at Independence, Kans., visited Dallas, Corsicana and Houston, Tex., on business in connection with the Pure Oil Pipe Line Company which was taken over and is now operated by the Prairie Pipe Line Company.

* * *

J. S. Cosden of New York, formerly head of Cosden & Company (now Mid-Continent Petroleum Corporation) has been at his Fort Worth office for several days. He has been looking after his oil interests in North Texas. He has considerable production in northern Brown County and in Archer County and is drilling several wildcats in this territory.

* * *

E. F. Horrigan has been transferred from The Texas Company pipe line department at Fort Worth, Tex., to the producing division of the company with headquarters at Cisco, Tex. He took up his duties at the Cisco office on March 10. Mr. Horrigan was succeeded in the pipe line department by J. W. Gilchreist, who came from The Texas Company office at Houston.

* * *

Dr. Joseph P. Umpleby, president of the Goldeline Oil Company and the Petroleum Reclamation Company of Oklahoma City, was called to the bedside of his father in Escondido, Calif., a few days ago. Doctor Umpleby, who has been devoting much of his time to reclamation work in the old Pennsylvania pools the past few months, has been in the Oklahoma City office for several weeks.

* * *

Minal E. Young, general manager of the New York Oil Company, returned to Casper, Wyo., from a trip to New York and other eastern cities. Mr. Young considers the chances for the construction of the North & South Railroad into Montana the coming year are excellent and this will give Salt Creek producers a chance to ship their oil to the junction with Chicago, Milwaukee & St. Paul Railroad at Miles City.

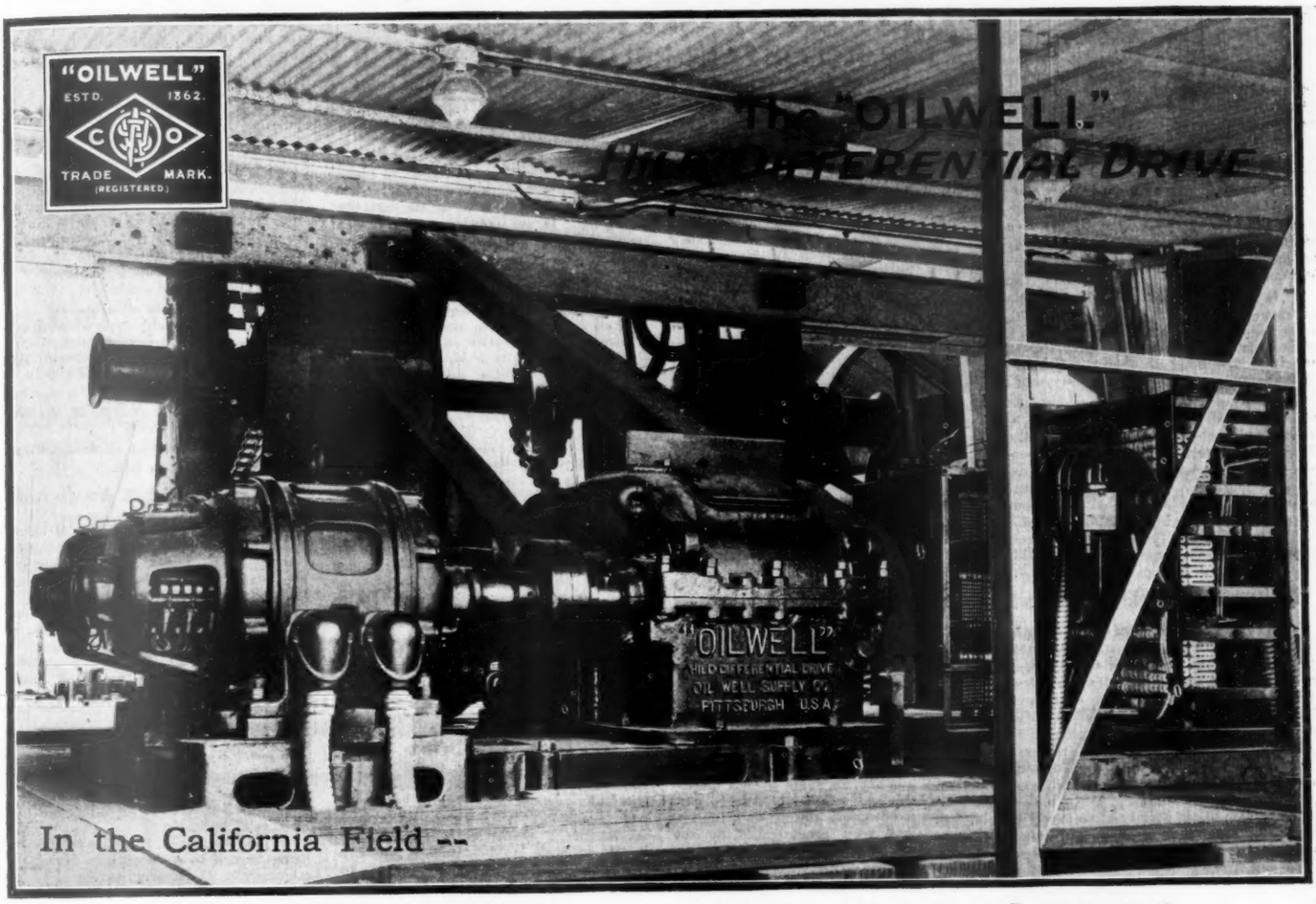
* * *

E. W. Clarke, executive vice president of the Union Oil Company of California, has been in Colorado for the past week or ten days making a detailed check of the company's operations in that area. The Union's drilling program calls for some 15 or 20 new wells this year and Mr. Clarke will undoubtedly complete the necessary preparations before returning to Los Angeles, possibly within two weeks.

* * *

Marcus Kinnebrew, superintendent for the California Petroleum Corporation in the Midway-Sunset Field, has just been appointed as assistant to T. J. Crumpton, general field superintendent. Mr. Kinnebrew, who is one of the best known field superintendents in the San Joaquin Valley, was in the employ of the Pan American for five years, leaving that concern to go with the Associated Oil Company, with which he was connected for over 10 years. He has been with the California Petroleum Corporation at Fellows since 1918 but will leave within a few days to assume his new duties in Los Angeles.

AUTOMATIC FEED *and* RETRIEVE HAVE BEEN THOROUGHLY PROVEN



In the California Field --

Drilling operations in California and Texas during the past two years have definitely proven the "OILWELL" Hild Differential Drive.

The original outfit is still in use in California and succeeding outfits are all proving the numerous advantages of Automatic Feed and Retrieve for rotary drilling.

With this device the bit is automatically fed and automatically retrieved or lifted upon suddenly encountering hard formations.

Additional advantages of "OILWELL" Hild Differential Drive are:

1. Faster drilling.
2. Cheaper drilling—less wear and tear on the drilling equipment, resulting in lower maintenance costs.
3. Straight hole.
4. Deeper drilling range because of better protection for the drilling equipment.
5. Uniform feed regulation for coring.

Send for special Bulletin descriptive of this device, or inquire at any of our 100 Branches.

OIL WELL SUPPLY CO.

NEW YORK—LOS ANGELES—PITTSBURGH, U.S.A.—SAN FRANCISCO—TAMPICO—LONDON

WORLD'S OLDEST AND LARGEST MANUFACTURERS OF OIL FIELD EQUIPMENT

NATURAL GAS DEVELOPMENTS

TO TEST GAS STOVES IN NEW LABORATORY

The appliance testing laboratory established at Cleveland by the American Gas Association will soon be ready to test gas stoves. Each model or type of range sent to the laboratory will be subjected to a series of tests to discover if it meets requirements established by the gas industry. If a stove passes the laboratory test, it will receive the official stamp of approval and be offered to the public as a product guaranteed to reach the highest standards of safety, construction and performance.

It is believed that operations of the laboratory will end the marketing of inferior appliances, because gas company officials have expressed an intention in future to deal only in stoves which receive the approval of the laboratory staff.

An idea of the extent to which the laboratory will function is gained from figures which show that there are about 250 manufacturers of gas stoves and perhaps 2,500 different models in this country. In addition, there are 100 manufacturers of water heaters, 125 of room heaters, 20 garage heaters, 25 of steam gas boilers, 25 of furnace and miscellaneous appliances, making a total of 555.

ALLOWS INCREASED RETURN

The Tennessee Railroad and Public Utilities Commission has approved the application of the Knoxville Gas Co. for an increased return on its valuation based upon reduction in price to the consumer. The return is to be upon the value as determined by the commission plus additions and betterments to the property. This decision removed the former maximum rate of return of 7½ per cent and provided that, after March 1, 1926, the company should be permitted to received one-half of 1 per cent in excess of a mixiimum return of 7½ per cent for each reduction of 5 cents in the commodity rate for gas below $1.20 per 1,000 feet, provided said additional rate of return be earned by the company. The rate schedule approved in this order was $1.50 per meter per month for the first 200 feet, or less, of gas consumption, and a commodity rate of $1.20 per 1,000 feet for all gas used per meter per month in excess of 20 feet, these rates being net and subject to penalty for delinquency in payment.

REDUCED BOILER RATES

The Oklahoma Corporation Commission has granted the applications of the Nowata County Gas Co., the Consumers Gas Co. and the Dewey Gas Co. for reduction of gas rates as applying to special industrial boiler gas service. The reduction is to remain in force during the summer season beginning April 15 and ending October 15. The same special rate will be put in force as was applied during the summer season of 1924. The Nowata County Gas Co. rate applies in Nowata and Delaware, the Consumers Gas Co. rate in the city of Miami and the Dewey Gas Co. at Dewey. The rate follows: For the first 500,000 feet per month per customer, 35 cents per 1,000 feet; for all over 500,000 feet, 20 cents per 1,000 feet; penalty, 2 cents per 1,000 feet where consumer fails to pay bills before the tenth of the month.

PROTESTED GAS RATE

AUSTIN, Tex., Apr. 3. — Oral arguments in the Municipal Gas Co.'s appeal from action of the city of McKinney in refusing to permit an increase from 25 to 50 cents "ready to serve" charge have been submitted to the Texas Railroad Commission.

DALLAS GAS CO. ASKS INCREASE TO OBTAIN PROFITABLE RETURN

DALLAS, Tex., Apr. 3.—A petition asking for a substantial increase in domestic gas rates in Dallas was filed with the Mayor and City Commissioners by the Dallas Gas Co. The present rate, the petition said, is causing the company to operate at a loss in annual revenue and a higher rate therefore is justified. The petition was referred to Supervisor of Public Utilities John W. Everman to analyze the new schedule of rates asked, with a report to the City Commission on the advisability of granting the new rates.

The petition of the company states that the company has operated under the rates now in effect for more than eight months, and during said period has failed to earn the return allowed and provided for by said franchise, its earnings failing during said period to amount to such authorized return by more than $172,604.09 after allowing depreciation. Its net earnings during such period have been at a rate less than 1.58 per cent per annum upon the property value under its said franchise when it is entitled thereunder to 8 per cent."

"The said reserves should now have a total of $665,589.16, when, in fact, the total is only $100,291.69.

"There is nothing whatever in the surplus reserve and it is manifest therefore that the surplus reserve is now not more than one-half normal, and said franchise provides expressly that whenever surplus reserve is reduced to or is not more than one-half normal then this company shall have the right to increase its current maximum rate per thousand cubic feet to such an amount as shall appear necessary to bring the surplus reserve to normal, and accordingly the schedule hereto attached has been promulgated by the company in accordance with the provisions of said franchise.

"It is manifest under the provisions of the franchise and the company shows that the present rates should be increased, and the rates set forth in the schedule hereto attached are not as great as the rates to which, under the provisions of the franchise, the company is now entitled.

"While the property value under the provisions of said franchise is now $4,219,372.09 the company respectfully shows that in fact the present actual value of all its property, used and useful in performing its service to the public in the city of Dallas, is in excess of $6,000,000; and continuously during said year 1925 and during the year 1926 down to the present time the value of its said property was in excess of $6,000,000. During the year 1925 the net earnings of the company, after allowing depreciation and amortization as provided by law, were at the rate of less than 3.23 per cent of the present actual value of its said properties, and during the last eight months, namely, from July 1, 1925, to March 1, 1926, its net earnings, after allowing said depreciation and amortization were at the rate of less than 1.18 per cent per annum on said actual value of its properties.

"Under the laws of the State of Texas during said time this company has been entitled to a net return on such value of not less than 10 per cent per annum.

"It is thus manifest and the company respectfully shows that the continuance of the rates now in effect in addition to being contrary to the provisions of said franchise heretofore referred to, will operate to confiscate the company's property and will operate to take the company's property without due process of law.

"In this connection, however, the company shows that at all times it has faithfully stood upon and complied with the provisions of said franchise and as already appears herein, the company is entitled to the rates set forth in the attached schedule and is entitled to higher rates and a greater increase than effected by the rates set forth in the attached schedule. It is likewise manifest that aside from the provisions of the franchise in this respect, with which the company has always complied and with which it is willing to comply, under the provisions of the Constitution of the United States and under the provisions of the Constitution and laws of the State of Texas, the company is entitled to a very much higher increase in return on the value of its property than that which will be effected by the rates set forth in the attached schedule.

"It is manifest, and the company respectfully shows that the rates heretofore charged by the company and now in effect are grossly insufficient, inadequate and noncompensatory and in violation not only of said Constitutions and laws, but also of said franchise, and the company is entitled to an increase of such rates as to conform to the provisions of said franchise, as well as comply with the said Constitutions and laws.

"Accordingly, this company respectfully shows that it is entitled to an increase of its rates so as to give a return to it that will be adequate and fair, and accordingly the company respectfully makes application hereby to your honorable body for the necessary increase of its rates, rentals and charges in order to give to it the net return to which it is entitled, and further the company respectfully makes application hereby to your honorable body for approval and establishment of the rates so set forth in the schedule hereto attached and generally for such relief as it may be entitled to receive in the premises."

TWENTY GAS COMPANIES INVOLVED IN MERGER

A merger of 20 gas companies into a $10,000,000 corporation under the control of Southwestern Gas Co., with headquarters in Independence, has been announced. The companies now supply cities from Olathe, Kans., on the north to Skiatook, Okla., on the south. The first purchase was that of the Owen-Osage Oil & Gas Co. at Caney, which gives the company control of much of the Osage Indian nation gas supply. The companies engaging in the merger follows:

Owen-Osage Oil & Gas Co., Osage Gas Producing Co., Tulsa Gas Producing Co., Caney Pipe Line Co., Caney Natural Gas Co., Osage Oil Land & Development, Evidence Oil Co., Oil & Gasoline Co., Southwestern Gas Co., Southwestern Utilities Corp., Independence Gas Transporting Co., Olathe Gas Development Co., Southwestern Public Service Co., Coffeyville Gas & Fuel Co., Olathe Gas Distributing Co., Spring Hill Gas Co., Union Gas & Fuel Corp., Altoona Gas Co., Fredonia Gas Co., Kasigan Gas Co.

The leading figures in the merger are M. L. Truby, George T. Guernsey, Paul R. Johnson and George T. Guernsey, Jr., of Independence, Kans., and B. E. Ladow and W. D. Pratt of Fredonia.

The daily gas sales of the merged companies will be about 40,000,000 feet, being one of the largest gas companies in the country. The cities served have a population in excess of 100,000. Included in the property bought from the Owen-Osage is the 167,000-acre Osage lease from the Government. The company will also produce much oil. Branch offices will be located at Coffeyville, Caney, Fredonia, Burlington, Yates Center and Olathe. All of the company is owned in Kansas, all of the eastern stockholders having been bought out.

CITES ADVANTAGES OF NATURAL GAS FUEL

Just what natural gas means to any city and its people, and a rather complete resume of its advantages was covered by George Hill, attorney for the Houston Pipe Line Co., natural gas developer, in an address before the Houston, Tex., Salesmanship Club.

Mr. Hill said in part:

The history of the development of the cities of the world has demonstrated that the industrial development of cities of the first rank depends upon these three fundamental factors, named in the order of their importance:

First, deep water, affording coastwise and transoceanic trade.

Second, concentration of railroad trunk lines.

Third, cheap fuel.

The three principal industrial fuels are coal, oil and natural gas.

Although 11,000,000,000 feet of natural gas was consumed in the United States during 1925, fewer industries enjoyed the advantages of natural gas than the industries burning coal and fuel oil.

The reason for this is that coal and oil can be transported wherever rail, water, automotive or horse-drawn vehicles can convey them and therefore those two fuels have a world market. Any industry, wheresoever located, can use either one or both of them.

Natural gas, however, can be transported only through a pipe line, and the industries in the district served by such pipe line can alone enjoy the advantages of this fuel.

What, then, are the advantages of natural gas?

In the first place, the natural gas now being burned in metropolitan Houston is a composite of three gases:

(a) Methane, having a heating value of approximately 1,000 British thermal units per cubic foot, and

(b) Ethane, having a heating value of approximately 1,750 British thermal units per cubic foot, and

(c) A small percentage of nitrogen, which is an inert gas of no heat value.

The proportion in which these gases are intermingled in their natural state has produced a composite gas with a heating value of nearly 1,000 heat units per cubic foot, which is considered a high heat value, due to the absence of inert gases in any appreciable quantity.

The large industrial consumer, in using natural gas in the Houston district, can, and in several important cases has, contracted for gas for a fixed price for a long period of time. This enables the industry to estimate with certainty production costs for a long period ahead, and to plan accordingly, whereas, with other fuels, the price is fluctuating widely. This affords great economy and stability to such industry.

Another advantage of natural gas is the fact that the industrial user does not have to invest a large sum in buying, handling and storing his fuel. A pipe line connection on the plant site conveys the fuel to the burners under the boilers, and the firing of the burners becomes a simple, constant process.

Natural gas is an absolutely clean fuel when properly burned leaving no deposit in the furnace, on the boiler flues, or in the stack, and it has an uniform combustion, very easy to control.

What has been said relates to the economy and utility of natural gas as industrial fuel.

The Houston Pipe Line Co. is now in operation in metropolitan Houston, encircling a great part of the corporate limits, and extending down the ship

(Continued on Page 113)

AMERICAN
OK PUMPING JACK

PATENTED IMPROVED

The question has been asked, "Who solved the problem of eliminating the trouble experienced in the lower channels breaking at the bolt holes where the old style saddle is bolted in the OK Jacks?"

The answer is, "An AMERICAN did the good work."

Another question was asked, "How much real benefit is derived in using an American Improved OK Jack?"

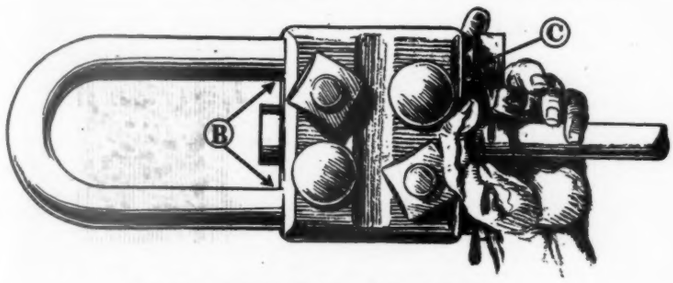
The Superintendents and Pumpers have volunteered to answer this important question in this way: Citing to the weakness put in the Jack lower channels for bolting the old style saddles in, showing, for instance, in a No. 2 OK Jack, channels 3″ wide are used and 1 1-16″ holes are punched or drilled in the channel for bolting the old style saddles in the Jack, the holes being a trifle more than 1-3 of the width of the channel, it can be plainly seen that at least 20% to 30% of the strength of the channel is cut away. This weakening, being directly over the bearing or fulcrum, comes where the greatest stress is in the Jack.

In the American Improved Saddles, they reinforce the channels where the greatest stress comes.

Also particular mention has been made by the Superintendents and Pumpers of the American new feature in their Jack Pitman Bearing which gives double service. Being connected with the building of OK Jacks for a number of years, we have seen where some needed improvements should be made.

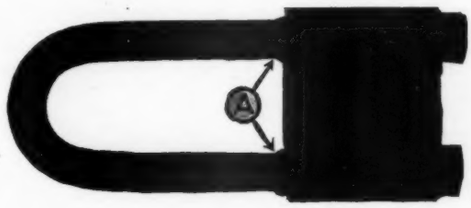
Our Improved OK Pumping Jacks, with 75 other Oil Field Supplies, are handled by the Supply Companies.

SAFETY FIRST IN THE OIL FIELDS



OLD STYLE CLAMP

For a number of years the old style C. C. Clamps have been used, which have caused numerous accidents, in the Pumper having his hand or fingers caught between the head of the U Bolt and the clamps as shown at "C". In many instances the finger has been broken or crushed very badly.



SAFETY C. C. CLAMP

In our Safety C. C. Clamp the dangerous condition has been eliminated as can be seen at a glance at "A", with the upset collar in the U behind the clamp, the clamp is held in place and cannot slide back on the U while the well is unhooked.

Guaranteed to Give Satisfaction

95% of the practical oil field Superintendents and Pumpers, who have seen our clamp, say the Safety Feature is one of the best ideas out, as there is so much hooking on and off of the pumping wells.

Manufactured by the

AMERICAN MANUFACTURING CO. OF TEXAS

OIL FIELD SUPPLIES—Specializing in Swaged Nipples, Bull Plugs and Pumping Outfits

WEATHERFORD, TEXAS

EQUIPMENT AND SUPPLIES

OPERATION OF ROTARY WITH MAXIMUM SERVICE

The Hughes Tool Co. of Houston, Tex., has distributed a new catalog describing several of its products. The catalog, in colors, comprehensively illustrated, contains much information useful to rotary contractors and all those interested in the operation of rotary tools.

One item of equipment described is the Hughes Weight Indicator. A very important factor in determining conditions which will give maximum service in a given formation, is the weight on the bit. This factor may result in the failure or success of the rotary hole, and the use of this tool may result in greater drilling efficiency.

The weight indicator is placed on the dead end of the rotary line at least 10 feet from the derrick floor, and by a hand upon the dial it records the weight upon the line.

OPENS MID-CONTINENT OFFICES

The Ohio Injector Co., Wadsworth, Ohio, manufacturers of brass and iron valves, injectors, ejectors and lubricators, have opened up two Mid-Continent offices at 503 Alexander Building, Tulsa, Okla., and 413 Holmes Building, Fort Worth, Tex., with warehouse stocks in both these cities. The company will be represented by J. J. Bissett, formerly vice president of the Continental Supply Co., and Vic Morganstern, formerly purchasing agent for Continental Supply Co. since the company was organized, and C. H. Brown in charge of the north Texas territory for Continental.

APPOINT MANAGER

Announcement has been made of the appointment of Harlan A. Pratt as manager of the oil and gas engine deparment of the Ingersoll-Rand Co. Mr. Pratt was connected for many years with the sales department of the Westinghouse Electric & Manufacturing Co., later becoming sales manager of the Atlantic Elevator Co., exclusive agents in the East for Westinghouse gearless traction elevators. For the past three years he has been sales manager of the Elevator Supplies Co., of Hoboken, N. J. Mr. Pratt is a graduate of Stevens Institute of Technology and a former director of the American Institute of Electrical Engineers.

NEW BRANCH OFFICES

The Hills-McCanna Co. announces the establishment of two new branch offices, one in Denver, Colo., in charge of Edwin McSheehy, 310 Patterson Building, the other in Tulsa, Okla., under the management of A. B. Harrison, Room 805 Mayo Building. These two offices will handle the sale of No. 45 Alloy and other corrosion resisting metals manufactured and marketed by the Hills-McCanna Co.

TRADE STANDARDS

The second edition of the Trade Standards adopted by the Compressed Air Society has just been issued. For convenient reference a number of tables relating to compressed air have been incorporated in this edition and there has been added a chapter or general information relating to commercial practices in the industry.

AWARD REFINERY CONTRACT

The Widdell Engineering Co. and Arthur G. McKee & Co., associates, have been awarded a contract by the Marland Refining Co. for improvements at its Ponca City refinery. This work will involve a three-unit Gray vapor treating plant, pipe lines and all accessories.

OIL COUNTRY TUBULAR GOODS BRIGHTEST SPOT IN STEEL TRADE

By B. E. V. Luty

PITTSBURGH, Pa., Apr. 5. — In the steel market as a whole there is no denying that in the past two or three weeks there has been a tendency for demand to fall off somewhat. Some mills admit this; others, apparently sidestepping, assert that there is no noticeable change. All admit that the sales competition has become still more strenuous. No one admits that in any line prices have grown softer, but it is said that every other conceivable effort than making price concessions is resorted to in the effort to maintain sales.

The turn may be of small moment or may grow into a really impressive decrease in buying, resulting in a distinct decrease in production. Such a turn would be perfectly natural in the circumstances, for mill operations have been maintained at an exceptionally high rate for five months past.

Pipe Mill Operations

Easily the brightest spot among the finished steel lines, as to demand prospects, is in oil country tubular goods. Not only has this demand been growing since the first of the year, but it is expected there will be some further increase. No definite predictions can, however, be made, on account of the uncertainty of line pipe bookings. These have been decidedly heavy of late, contributing in an important way to the present high operating rate of the pipe mills, but no one can have any definite idea of whether the flow of this class of business will continue.

As at the time of last report, pipe mill operations are estimated at about 85 per cent, against 80 per cent a month ago and 60 to 65 per cent last December. Yet demand for merchant pipe is still rather sluggish, having been in keeping with consumption, naturally light during the unfavorable weather. Jobbers did not stock up against spring trade as they used to do. With merchant pipe demand moderate, as it is, even an 80 per cent operation of the pipe mills would prove that there is a very heavy demand for line pipe, casing, tubing, etc., for the oil and gas industry.

While steel buying in general seems to have decreased a trifle lately, this has not thus far been reflected in steel mill operations. In the four months, November to February, there was a very high rate, uniformly sustained, and very close to the highest rates ever touched. All accounts are that mill operations in March were a trifle above the four-month average, while the expectation seems to be rather general that this month will show some decrease in steel production. Much reference is made to the historic fact that March usually stands out as a month of particularly heavy production.

Automobile Trade

The automobile trade has been taking increasing quantities of steel since early in the year, but is probably now approximately at as high a rate as is likely to be attained at any time this year, so that the prospect is the next change will be a lighter flow of steel into that industry.

The agricultural implement works have had their heaviest run since the winter of 1919-20 and are now approaching what used to be their dull season. It is said that on account of diversification this industry is much less seasonal than formerly, but it can hardly escape some tapering off in the next three months.

Lettings of fabricated structural steel continue heavy, no decrease from the high pace of more than a year past being shown.

There has been hardly any freight car buying in the past two or three weeks, but this line has its ups and downs, and the car shops are moderately well filled with orders.

Pig iron continues dull, and the dullness is very impressive in view of the time, for ordinarily there would have been quite a run of second quarter contracting, whereas there has been almost none at all. Prices are strictly held in the Pittsburgh Valley market, at levels reached early in November, but there is very little test by way of important inquiries.

Connellsville coke is dull and steady.

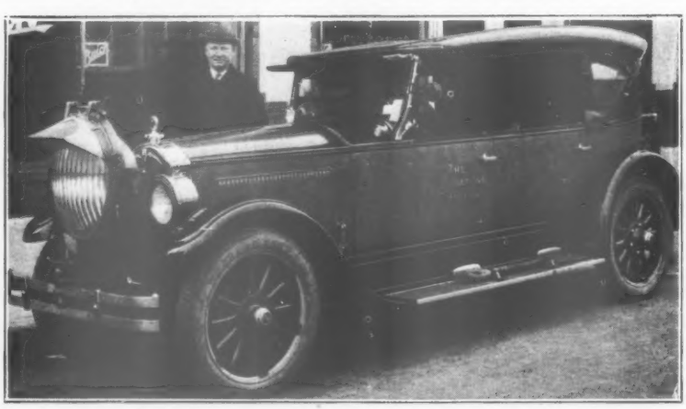
OPENS TULSA OFFICE

The Vickers Petroleum Co., of Wichita, Kans., has opened Tulsa offices at 425 Kennedy Bldg. The new offices are in charge of E. J. Thompson formerly with the Humphries interests in Texas.

SEAMLESS STILLS

The Roland Steel Co. Inc. of New York, has mailed to the trade a leaflet describing Roland seamless stills for refineries. This concern specializes in seamless expansion chambers, stills and tubing.

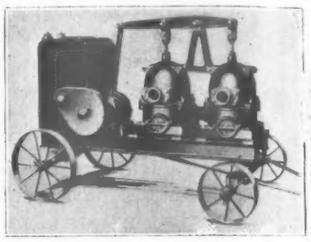
GIGANTIC LIGHT ATTRACTS ATTENTION



The above photo shows Alex E. Johnson representative of the Pyle-National Co. of Chicago, Ill., contributing to the illumination of the streets of Fort Worth, Tex.

CLAIM ADVANTAGES FOR NEW DIAPHRAGM PUMP

Diaphragm pumps usually work under conditions not conducive to long life of wearing parts. The self-oiling speed unit used on Novo diaphragm pumps powered with UF, 3-6 h.p. two-cylinder engines is said to completely enclose and protect all gearing, eliminating many disadvantages of open geared type pumps.



The enclosed, self-oiling units are built by Novo, and used only on Novo diaphragm pumps. This development was shown for the first time at the Good Roads Show, in Chicago, last January. It created considerable interest.

By using the Novo UF, two-cylinder 3-6 h.p. engine, the engine with 180 degree opposed throw counterbalanced crankshaft (running in Timken tapered roller bearings) Novo has developed what would be called in automobile practice a "de luxe" diaphragm pumping outfit.

These pumps are described as surplus powered and smooth running, minimizing the strain upon the engine and pump, and lengthening the life of the outfit.

MEASURES TANK CONTENTS

The Liquidometer Co. of New York has published a booklet on the de Giers Liquidometer. This is reported to be attaining popularity among filling station owners. It is used for registering tank contents. The action is hydraulic, and does not depend upon springs, valves or pumps.

WILLIAM POWELL CO. CHANGES

The directors of the William Powell Co. of Cincinnati, Ohio, announce the election of H. H. Coombe as president and treasurer, James Coombe as vice president and general manager, and George E. Weitkamp as secretary of the company.

AWARDED PATENT

A patent was issued on March 16, 1926, to Herbert W. Day, assignor to the Painting & Finishing Equipment Sales Co., for apparatus for applying coating. It is No. 1,576,725. This patent was issued after being awarded priority in extended interference proceedings in the Patent Office, and covers several features of paint guns. The W. N. Matthews Corp., of St. Louis, is the exclusive licensee under this patent.

SPEARMAN SUPPLY HOUSE

The Parkersburg Rig & Reel Co. contemplates establishing a branch supply house at Spearman, Tex., to serve a section of the Panhandle oil and gas district.

BUYS MOTOR DIVISION

On January 1, 1926, the motor division of the Wellman-Seaver-Morgan Co., of Cleveland, Ohio, operated at Akron, Ohio, was purchased in its entirety by the Sanderson-Cyclone Drill Co. of Orrville, Ohio.

What's a Season or Two, Anyhow?

SPRING is here at last! Still another season has rolled around and we can all feel its cheery tang about us everywhere. The links are dotted with the early species of golf bug; our next door neighbor is tuning up the "old bus" for more summer jaunts into the great open spaces; and the kids are playing "knuckles down" in between temperature taking visits to the old swimming hole.

Yes sir, spring has come with its freshness, budding flowers, chirping birds, spring fever and everything. But what does it all mean to a Bessemer compressor? You're right! It doesn't mean a thing.

Seasons may come and seasons may go but the Bessemer keeps on indefinitely, impervious to such mere trifles as seasonal changes.

Bessemers know no season. One merges into another through a string of years and they roll by unnoticed while the Bessemer keeps on uninterruptedly working. That's why the Oil Industry depends on Bessemers—and why shouldn't they?

THE BESSEMER GAS ENGINE COMPANY
52 York Street ∴ ∴ Grove City, Pa.

BESSEMER

BESSEMER OIL FIELD ENGINES – COMPRESSORS VACUUM PUMPS – ROLLER PUMPING POWERS

Regan Pipe Suspension

Four Cardinal Principles of the Regan Head

1. Space Conservation
2. Pipe Suspension
3. Pressure Control
4. Fire Protection

Lew D. Hilton, who is in charge of our Mid-Continent office at Houston, has had a wealth of experience in directing oil drilling production and has for many years been recognized as especially qualified on control work. His services or his advice are at your command without charge. Call on him.

MAIN OFFICE AND PLANT
Los Angeles Harbor
San Pedro, Calif.

HOUSTON, TEXAS
Regan Sales Co.
1521 Post-Dispatch Bldg.
Main Office Mid-Continent Field

TULSA, OKLA.
406 West First St.

NEW YORK
Woolworth Building
Export

Regan

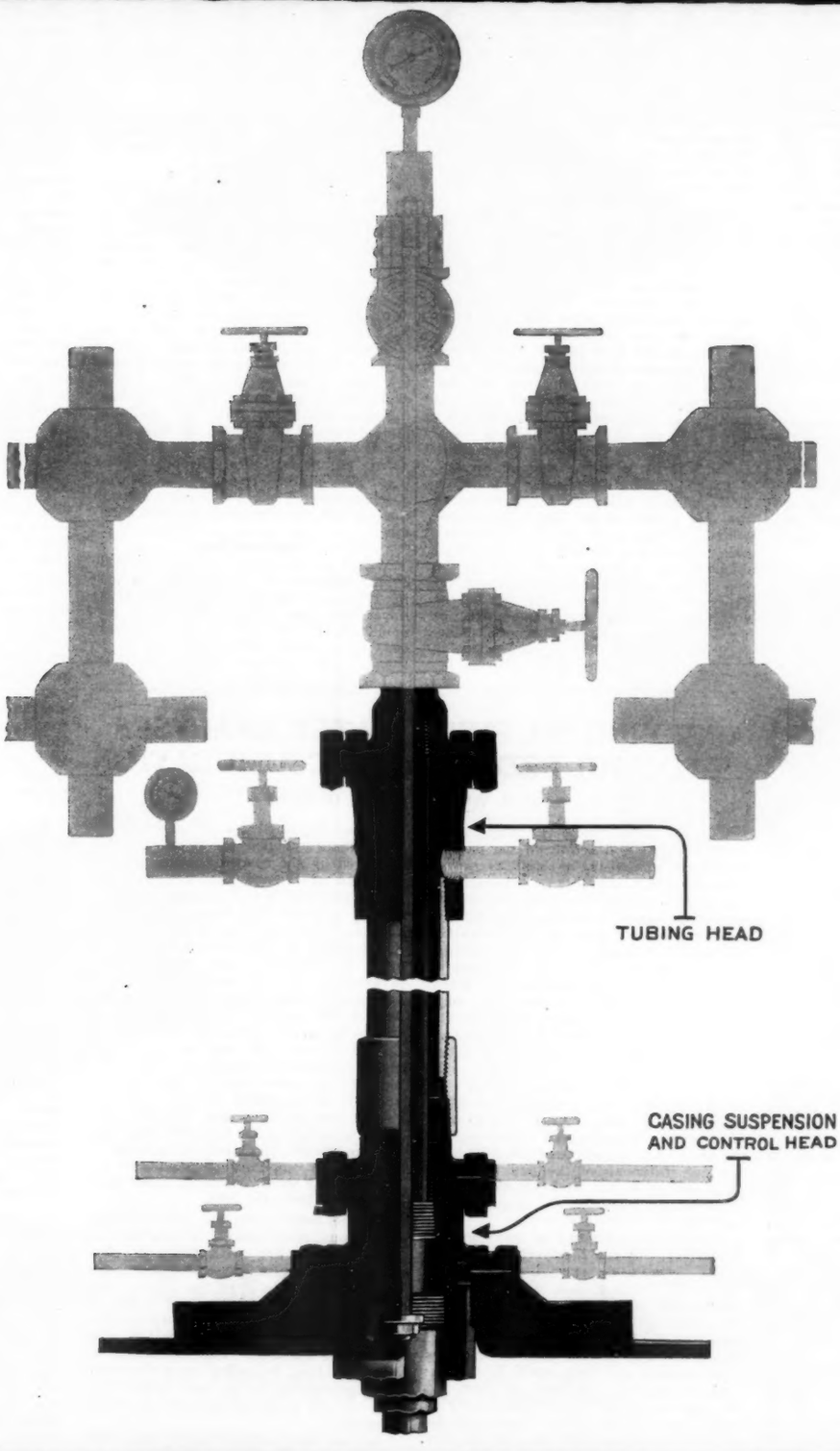
Forge & Engineering Co.

San Pedro California

Quality — Wrought on the Forge of Experience

Designers and Manufacturers

and Control Head



of Quality Oil Well Equipment

Core Drilling in North Mid-Continent

Use for Determining Structural Conditions in Certain Areas of Oklahoma and Kansas Fields Described in Detail

By H. G. Officer, Glenn C. Clark and F. L. Aurin*

The use of the core drill for determining structural conditions is finding its chief application in those areas of Oklahoma and Kansas where the surface outcrops are of such a nature as to prevent detailed mapping by the usual plane table methods. These areas may be considered as largely coincident with the outcrops of the Wellington shale and later beds. There are certain areas in the Enid formation which can be detailed satisfactorily and the same, of course, is true of the Wellington; but the greater part of the areas of these rocks are not amenable to ordinary field methods of structural study and recourse has been had to the use of the core drill. This area of Permian outcrops, where the core drills are being principally used, is about 100 miles wide, and extends from Guthrie, Okla., north beyond McPherson, Kans. The regional dip of the rocks is to the west or southwest with an inclination of 20 to 40 feet per mile.

In this area it is usually possible to find key beds or to establish reliable correlations at comparatively shallow depths. The western limit of operations is determined principally by the depth to which the drills can penetrate satisfactorily. At present, holes deeper than 900 feet are the exception and these depths are necessary in northwestern Oklahoma in Range 6 West.

There are other areas where the core drill is used to supplement existing information but in no other part of the north Mid-Continent area, are the structural conditions worked out so exclusively by the core drill.

First Test

Credit for the introduction of the diamond core drill into the Mid-Continent area for use in determining structural conditions, belongs to M. M. Travis, formerly of the Midco Petroleum Co. While visiting some mines in Colorado during the summer of 1918 Mr. Travis saw a steam-driven core drill in operation and was impressed with its possibilities as an aid to structure finding in this part of the country. At his request the E. J. Longyear Co., of Minneapolis, designed a gasoline-driven diamond core drill, mounted on a steel frame and wheels. This machine was used early in 1919, checking up the structural conditions on two supposed folds mapped by the Government on the Chilocco Indian Reservation in Kay County, Oklahoma. According to Mr. Travis, about 25 holes, ranging from 50 to 200 feet in depth, were drilled, which indicated that a mistake had been made in the surface mapping. Two or three holes a week were drilled with this machine. After this work some holes were put down around the Billings Pool in T. 23n., R. 2w., Noble County, Oklahoma. So far as known this was the first application of the diamond core drill to structure finding in the north Mid-Continent area, and it is interesting to note that the first drill used was a portable gasoline-driven machine and that we are today using drills which combine these features.

In October, 1921, the Marland Refining Co. bought its first diamond core drill. This was a Sullivan H. machine for cutting 1-inch core and the drill was first used in Section 27 in T. 25n., R. 3w., Grant County, Oklahoma. After six months operation this machine was changed so as to permit of cutting 2-inch core.

The real beginning of the use of the core drills for structure finding in the north Mid-Continent area, may be said to date from the opening of the main part of the Tonkawa Field in Kay and Noble Counties. The discovery well of the main part of the field was completed in the southwest corner of the northeast quarter of Section 3, T. 24n., R. 1w. The surface exposures were such as to prevent mapping of this area by the usual methods and the Marland Refining Co. and the Roxana Petroleum Corp. joined forces in core-drilling this area. Through the courtesy of these companies, we are permitted to show the results of this work.

Development

The success of the core drilling at Tonkawa was so encouraging that work was immediately extended to other areas where the presence of favorable structural conditions not provable by other means was suspected. The Marland and Roxana companies were the only ones using the core drill until the Gypsy Oil Co. adopted it in March, 1923. These three companies gradually expanded their use of the core drill and are still the largest users of this method of structure finding. In 1925 several other companies began the use of core drills and today there are nine or more companies using about 35 drills in Oklahoma and Kansas.

The first drills used were steam-driven drills cutting 1-inch core. Because of the soft nature of the formations penetrated, it was soon found satisfactory core recovery was not safe with this small diameter and a change was made to the use of the equipment permitting the recovery of 2-inch core. The use of the steam-driven drills was common practice until the early part of 1924 when Marland Refining Co. began experimenting with a Fordson-driven drill. By the beginning of 1925 the manufacturers were offering CN or 2N type drills equipped with Fordson motor-driven and mounted on steel frames and wheels. These drills met with instant favor, and have been adopted by most of the companies doing core drilling.

In the first work with the core drill, the single tube core barrel was used but this was soon abandoned in favor of the double tube core barrel.

In this territory, most of the drilling was at first in the Wellington shale beds and to comparatively shallow depths. This permitted the use of clear water for circulation. With the gradual extension of operations to the west, and with the greater depths necessary to reach reliable key beds, it was found advisable to "fishtail" a considerable part of the hole. At first very little mud was used in the circulation and it was common practice to use a certain amount of casing to keep the holes from caving. With greater experience it was found that by thickening the circulation fluid the walls of the holes could be mudded up to such an extent as to prevent caving, and this removed the necessity for the use of casing. This is probably one of the greatest developments of the past year or so in the use of the core drill in this territory.

Improved Bits

Where the key beds lie at considerable depth and there is no advantage in saving records of the upper formations, these upper beds are "fishtailed" and the diamond bit is only used on the particular beds upon which correlations are to be based. The ordinary steel fishtail bit will drill probably 15 to 25 feet of sand or sandy shale and then requires replacement by a fresh bit. About nine months ago the first use of the new alloy stellite was tried. Stellite is an extremely hard cobalt-chromium tungsten alloy. It is applied to the wearing surfaces of the ordinary steel bit by melting and flowing it on by means of an oxy-acetylene blow torch. After applying the stellite the bit is sharpened on an emery wheel. Bits out of gauge must be dressed before applying the stellite. This type of bit was an immediate success and was quickly adopted for use by all of the operators. The stellite-treated fishtail bit has been found to drill from three to five times the footage that the ordinary steel bit will drill, and in areas where the amount of "fishtailing" may be 300 to 400 feet, it has increased the footage per drill per month by at least 50 per cent. This has resulted in a greatly decreased cost per foot and has also opened larger areas to the use of this method of determining structural conditions. The adoption of the use of a hard alloy on the wearing surface of the fishtail bit has been one of the greatest forward steps in the development of core drilling.

In the gradual change from clear water circulation to heavy mud circulation, there has been brought out the advisability of changing certain mechanical features of the drill. One of these relates to the clearance between the two tubes of the double-tube barrel, and it has been demonstrated that a slightly greater clearance in the passageway between these two tubes is a decided advantage where heavy mud is used. This has necessitated reducing the diameter of the core by an amount equal to the added clearance between the two tubes. So far, those who have experimented with this new core barrel feel that the advantage of added clearance in the barrel greatly outweighs the disadvantage of a smaller diameter core.

New Core Lifter

There is dissatisfaction with the present type of core spring, or lifter. It is made of tempered steel, and too frequently breaks. Damaged diamonds or a fishing job may result. Experiments are being made with a new type of core lifter, the "Lawson lifter," but it is yet too early to offer an opinion as to its superiority over the present type.

Much experimental work has been done in the effort to find satisfactory substitutes for diamonds. Certain special hard alloys, made up into small sticks, have been tried. They have the advantage of costing much less per bit, and are used where there is steel in the hole, or danger of having the rods stuck in the hole. Stellited, sawtoothed bits are also sometimes used under such circumstances. Carborundum bits, as substitutes for diamond bits, have been tried without success. As yet no satisfactory substitute for the diamond bit has been found.

Pumping Problems

Another development, just beginning, pertians to the pump which supplies the fluid for moving the hydraulic feed. As originally designed and used, the hydraulic was connected with the pump which supplied the circulation in the hole, but with the adoption of the use of mud, it is obvious that some modification of this practice should be made. As now operated, the pump which supplies the circulation in the hole also supplies the same mud fluid to the hydraulic. There is a consequent wear on the hydraulic which may very readily be obviated by the use of a separate pump for actuating the feed. The manufacturers are working on this problem and it is only a question of time before they will effect the proper design for a pump for this purpose. It is quite probable

*Prepared with cooperation of all the companies using core drills and read before American Association of Petroleum Geologists, Dallas, Tex.

APPLYING OIL FIELD WATER ANALYSES TO FAULT ZONE TYPE ACCUMULATION

By R. B. Whitehead and R. H. Fash*

The aim of this paper is primarily to incite interest and action on the part of petroleum geologists, as well as operators, to use all available data brought to the surface during the drilling of a well, especially waters, assuming that the water found in the producing sand with the oil bears a relation to it, which relationship can be worked out if the most is made of the waters encountered. Many operators pay attention to water only when it becomes a serious factor in the production of oil. They usually pay no attention to waters encountered in different sands during the drilling of a well, except to case off the water in order that deeper drilling may continue, but when water appears with the oil, they at once become very alarmed and suddenly realize that they encountered several horizons of water above the pay sand, yet they are at a loss to know the source of the water which makes its appearance with the oil without warning.

A water analysis can be made in any laboratory, but the interpretation of the analysis requires special study. The writers believe that one or a few analyses of water from a well may mean very little unless there is an attempt to build up a library of analyses, which should contain certain type of analyses from shallow and deep sands in the immediate vicinity. At least an effort can be made to collect waters from sands as wells are drilled. They need not be analyzed at once, but can be securely bottled and sealed for future reference.

Water data differs from sample cuttings in that the average geologist cannot test water for the many elements contained therein in his office, and therefore must rely upon the chemist, either employed by the company, or a commercial firm of chemists, to work out the necessary analysis for consideration. One reason, perhaps, why more waters have not been analyzed from wells is due to the inability of the average geologist to apply his chemistry with such a degree of accuracy as will result in favorable and correct interpretations of the water. Second, the analysis involves the use of apparatus which cannot be conveniently carried to the field nor set up in the average geological laboratory. The simple tests for chlorides and hardness can and are being applied in the field with results, but in this case very few are applying quantitative tests for chlorides, but are content to detect the presence of chlorides by applying silver nitrate solution to the water obtained, either from the core or from the hole.

In the fields along the Mexia-Powell fault zone of northeast Texas, we are necessarily dealing with fields in close proximity to faults. These fields are found on the upthrow side of the faults. The wells drilled have shown the Woodbine sands to contain more or less water. The amount of water generally increases with the age of the well. This increase is at different rates, depending upon the depth and the position of the well with reference to the structure and to the fault line.

In the Mexia-Powell producing zone, we have production coming from the Woodbine sand which is exposed at the surface some 45 miles to the west of these fields. This sand member dips at various rates to the east and south and

(Continued on Page 98)

*Before American Association of Petroleum Geologists, Dallas.

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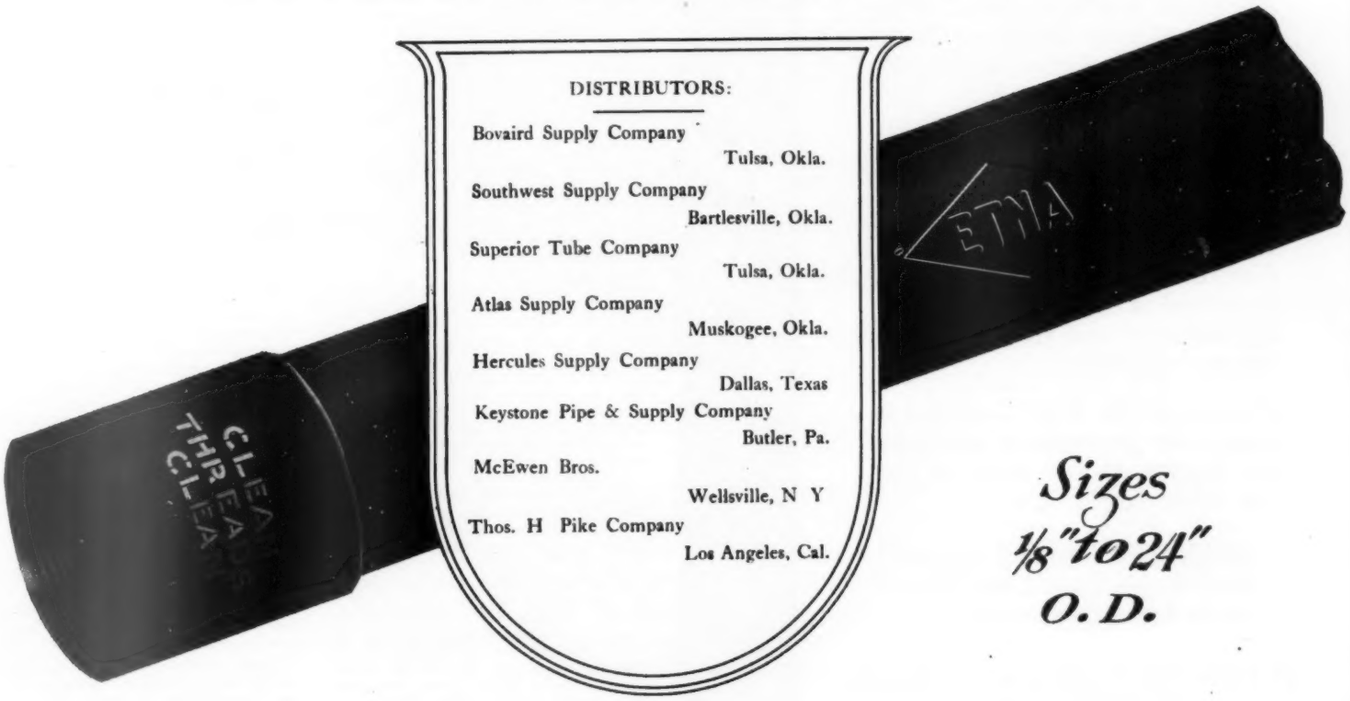

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that oil or some other fluid may be used in this system rather than water, as the thing could be so arranged as to give a system of high pressure, low volume, circulation and would not add very much to the size and weight of the equipment already in use. The use of some other fluid than water would remove the danger of having the hydraulic parts damaged by water freezing in them during cold weather. This is a development which will probably take place within the next year.

With the operation of so many drills exploration is gradually advancing westward where the key beds are found at greater and greater depths. If this westward movement continues it is but a question of time before drills capable of drilling 1,500 feet will be required. The manufacturers are already looking to this possibility and are making tentative designs for such equipment. Where deep drilling is to be done it probably will be found advisable to use a heavier drill, a separate pump for the hydraulic, and two pumps for purposes of circulation. Many minor improvements in methods of operation and in the design of the equipment will probably be made.

Methods of Operation

All of the companies have organized their core drill work as a part of their geological departments. It is common practice for the chief geologist to direct the work, although sometimes he delegates this to the district geologist. Under the geologist is a superintendent, or foreman, who is responsible for the mechanical and economical operation of the drills. The geological phase of the work is cared for by a subsurface geologist, usually in the district office.

The drills are generally operated in groups of two, as this gives a convenient unit, both from the mechanical point of view and from the point of view of the geologist. The superintendent has charge of all of the mechanical operations of the drills and he has under him foremen, or tool pushers, who have charge of groups of two drills.

Two men are required for the operation of the drill, one a runner and the other a helper. It is common practice to work 12-hour shifts so that a full crew will consist of two runners and two helpers. By arranging to operate the drills in groups of two, it has been found that certain phases of the work can be handled by one man for each group of drills. One water hauler is usually able to keep both drills supplied with water, and one setter is usually able to set the diamond bits for two drills. All units of groups of two drills are practically the same so that a company operating six drills might have a superintendent and three foremen. Each foreman has under him one truck driver for hauling water and supplies, two drillers, one of whom is a setter, and two helpers.

There is no set rule regarding the handling and interpretation of the core, and the application of the information so obtained. Generally the core drill foreman is familiar enough with the formations being drilled to write up a core description and plot a log and know when he reaches the key beds. Sometimes this same man is capable of running the elevations on the core drill holes, or this elevation work may be done by a regular instrument party which does nothing but this kind of work. When satisfactory correlations have been made, the subsurface geologist advises the core drill superintendent where the next location is to be made. The core drill foreman, or whoever examines the core, sends to the head office a written description of the core or a plotted log with such symbols as will enable the subsurface geologist to interpret it properly.

Types of Equipment Used

The drills used today are all made by the Longyear or Sullivan companies and are essentially the same as far as general features of design are concerned. All have the hydraulic feed and all use N rods, and cut 2-inch core. Most of the drills are the CN or 2N size, which are capable of drilling to a depth of 900 or 1,000 feet. Some size N drills are in use. Within the last year the manufacturers have been building the 2N or CN size drill mounted on a steel frame and wheels. A Fordson motor is the power unit and this 20-horsepower motor is able satisfactorily to drive both pump and drill until depths below 900 feet are reached. With the adoption of the gasoline motor for power those companies which had the larger, N type, drills installed 60 or 80-horsepower gasoline motors. Some companies are still using the steam-powered drills and are not yet satisfied as to the advantage of the gas-driven drill.

One of two drills using hydraulics with vertical movement of two feet have been used but the disadvantages of this type of equipment probably outweigh the advantages.

Certain operators have used a separate Fordson tractor for driving their pump. This practice permits of a variable pump speed, which is a decided advantage, and it also gives the assurance of having one motor in reserve in case either the drill motor or the pump motor should stop. Where only one motor is used there is danger of stoppage, when the operator will not be able to maintain circulation or raise his rods off the bottom of the hole. In such a case the rods are very likely to "freeze" in the hole, and this is one of the principal reasons for using a separate motor for driving the pump. Other operators meet this danger by having a Fordson tractor on the ground which can be used for raising the rods off the bottom of the hole in case the regular drill motor should go dead.

It is common practice to use a tripod derrick for carrying the sheave for the wire line used in raising and lowering the rods, and for handling casing. It is also common practice to have a small sectionalized house built around the drill for protecting the men from the weather. These houses are light and are easily knocked down and transported from one location to another.

Pumps to Handle Mud

With the almost universal use of mud instead of water for circulating in the hole, it has been found in many cases that the pumps originally designed for use with the drills did not stand the wear incident to such service. As yet, there has been no mud pump built for this particular use, but it is only a question of time before the manufacturers build pumps suitable for handling mud. A great deal of time lost on the drills is due to pump trouble. The sand cuts the liners and valves to such an extent that frequent replacements are necessary. The majority of the operators use a horizontal duplex 3½ by 5 pump for this work. One large operator is using a vertical triplex pump and finds that it gives satisfactory service if it is not packed too tightly. It has been found by experimentation that a rubber sleeve on the plunger of the pump is a decided advantage. This sleeve is designed to be automatically self-packing so that any wear is taken up by the rubber.

The 2N and CN drills which are being used are capable of going to a depth of about 1,000 feet but some N-type drills are being used, equipped with larger motors and separately driven pumps, which are capable of going to greater depths.

Many of the drills were equipped at the factory with small electric generators for illumination at night but in most cases these generators have been found to be too small and their use is not satisfactory. Usually, Coleman gasoline lamps are used about the rig. One operator is using successfully small installations of Delco lighting equipment, and finds them very satisfactory. Good illumination is a decided advantage and its cost is little greater than that of poor illumination. It is probable that the Delco or some similar system of electric lighting will become general practice within a short time.

"Junk wagons," designed to carry the miscellaneous tools and small pieces of equipment are coming into favor. These wagons have especially designed boxes for receiving particular articles and in cases of Delco light equipment this is usually built on the wagon. Gasoline and oil barrels are usually built on the wagon. When moving from one location

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to another the wagon is attached to the rear of the drill.

Procedure in Drilling

The first step in drilling a hole is to obtain the permission of the landowner for drilling on his land. Locations are usually made at corners of sections or at the corners of quarter sections so that the foreman or superintendent has a choice of four corners for his location. Generally no objection is met with on the part of the farmers and usually no charge is made by him for entering on his land. In case he has a crop growing damages are paid to him, the amount usually being agreed upon before the location is made. It is desirable in doing core drill work that the good will of the farmer be won and retained and this means that upon the completion of a hole, the slush pits should be covered, the fences repaired and things left in as good condition as before. After arranging with the farmer for the location, the slush pits are dug, usually 6 or 8 feet wide by 12 or 14 feet long. Where considerable "fishtailing" is to be done, two pits are used, one as a settling pit.

By the time the pits are dug, the drill is usually on the ground and it is placed in position and leveled up. In summer time it is advisable that the radiator end of the machine be placed toward the direction from which the prevailing winds blow. This is the only occasion for orienting the machine. After the machine is leveled up and the timbers for the flooring placed, the flooring is put down and the next step is the erection of the tripod.

The tripod is raised by power, sometime from a "cat head" on the drill itself, and sometimes by a tractor. The poles for the tripod are 35 feet in length and give a head room of about 30 feet between the sheave and the ground. After raising the tripod, the bases of the poles are moved so as to center the head sheave over the center of the drill. With the machine in position and the tripod up, the next step is the erection of the sectionalized house which requires but a few minutes.

The elevation of the hole above sea level is usually determined by plane table and alidade as soon as the drill is in position.

While the machine is being erected the water hauler has been filling the slush pits with water, and the core boxes, gasoline and oil barrels, drill rods, casing, miscellaneous tools, etc., have been placed on the new location. It usually requires about eight hours to tear down at one location, move several miles, rig up at the new location and start drilling.

Determining Depths

Where no difficulty is expected in carrying a 3-inch hole to the desired depth, the hole is started with a 3-inch fishtail bit. Where it is anticipated that casing will be required, the hole is started with at 4½-inch fishtail bit. It is sometimes necessary to set a few feet of surface pipe to keep sand and gravel out of the hole. If it is necessary to set casing the 4½-inch bit is used to the point where it is desired to set the casing and a 3-inch fishtail bit is used from there to the point where it is desired to start coring.

The fishtail depths are usually determined by the subsurface geologist and the superintendent or foreman knows, when he is given the new location, to what depth he can drill with the fishtail. The amount of core recovered is dependent largely upon the character of the formations upon which the correlations are based. In the case of an easily recognizable limestone bed, it may be possible to fishtail to within a few feet of it and cut only a few feet of core. In cases where dependence must be upon correlations of beds rather than upon any one definite bed, it is good practice to get such a sequence of beds as will give an unquestioned correlation. In some areas this requires only 20 or 30 feet of coring but in others it may require 100 feet or more. In certain parts of Kansas it has been found that considerable hole must be cut with the diamond bit because of the presence of thick beds of gypsum which are not satisfactory markers and which the fishtail bit does not penetrate satisfactorily. In such cases it may be necessary to do a considerable amount of diamond work before the key beds are reached.

As the cost per foot of core recovered is many times greater than the cost per foot of hole made by the fishtail bit, it is desirable to "fishtail" as large a proportion of the hole as possible and to core as little as is consistent with conservative correlations.

Removing the Core

In "fishtailing" it is not necessary to withdraw the rods from the hole except when the bit becomes dull, and often the bits will drill several hundred feet before having to be sharpened. When core is being cut it is necessary to withdraw the rods after 10 feet of hole has been made, as the core barrel will only accommodate this amount of core. The core is taken from the core barrel, washed and placed in trays in proper order. This placing of the core in the tray in proper order is an important point as it is easy to become confused and place the core in the box in an inverted position. The core boxes usually used are capable of holding about 40 feet of core. The boxes are substantially built and contain two trays. Each tray is 3 feet long, divided into 7 partitions, each of which is 2¼ inches wide. Markers are used in the trays to designate the depth from which the core comes. In cases where a 10-foot run has been made and only 8 feet of core recovered, the driller uses his best judgment in determining in what part of the section the 2 feet of missing core should belong and he indicates this by proper markings in the box.

In fishtail work it is possible to drill several hundred feet per shift. In cutting core, however, the speed is much slower and the average is probably about 30 to 40 feet of core per day. It is usually possible to determine from the first few feet of core where the key bed may be expected, and the foreman, or whoever is responsible for making the correlations, knows where to expect the other beds. If they appear in the proper order he can determine where he wants to stop the hole and advise his drillers of that fact.

As a general thing, the drillers are moved in the day time and if they should reach the key bed at night they may either shut down or continue to drill, depending upon the policy of the company for which they work.

Oil and gas is usually bought at tank wagon prices delivered at the drill from the nearest town. Other supplies usually have to be obtained from either Garber or Ponca City.

When the hole has been completed, a detailed description of the core is sent to the head office and becomes a part of the permanent record. The core is then thrown away.

The operation of tearing down a rig begins with the last run, when the rods are broken out in 10-foot lengths instead of the usual 20-foot lengths. The process of tearing down the rig is almost exactly the reverse of putting it up. The house is torn down first, the tripod is taken down, the flooring removed and the drill is ready to be moved to the new location.

The information obtained from the core drill holes is usually placed upon a separate subsurface map for this purpose and the subsurface geologist draws his contours as the work progresses. In plotting the logs a scale of 1 inch to 10 feet is commonly employed. Conventional colors for the different formations are used.

It is usual practice to drill the holes 1 mile apart but in cases where abnormal structure or other reasons warrant it, locations are made at half-mile intervals.

Costs of Equipment

The cost of a 2N or CN type drill, gas-driven, mounted on wheels, equipped with 500 feet of rods, is about $7,000 delivered. This drill, if used alone, will require 12 or 13 diamonds, of 2½ karats each, which costs about $4,400. Miscellaneous tools, housings, etc., cost about $500, making a total of about $11,900. To this must be added the cost of a Fordson tractor, if it is wanted, and also the cost of a truck for hauling water and supplies. To equip two drills, including 500 feet of rods each, 19 dia-

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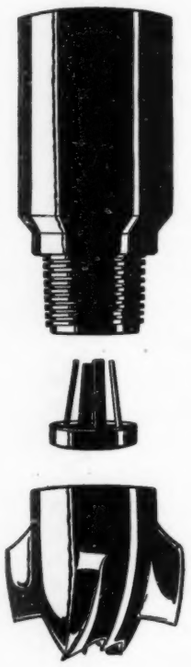

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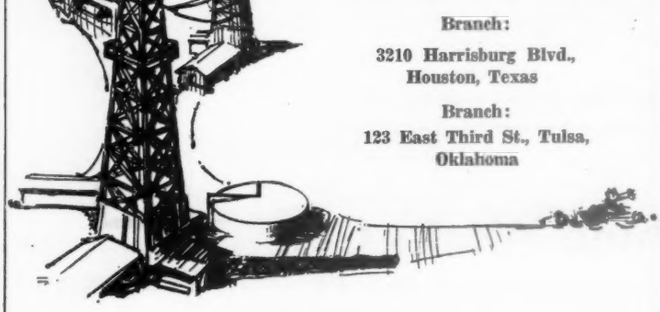

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monds, housings, tools, etc., tractor and a Ford truck, costs in the neighborhood of $20,000.

Cost of Operation

The largest single item in the cost of operating core drills is labor. Drillers receive $10 per day for 12-hour shifts. Helpers receive $6 per day. A man who sets bits and runs the drill, known as a "runner-setter," is paid from $12 to $12.50 per day. Some companies allow 50 cents per day per man for transportation to and from the drill. The truck driver and other labor receives $5 per day. The salaries of superintendents and foreman are conventional. Other items which enter into the cost of operation are gasoline and oil, or fuel; teaming, hauling water and moving drills; operation of trucks and cars; diamond consumption, usually a very small item; repairs to pumps and other parts of machinery; and miscellaneous supplies. Another large item in the cost of operation is the depreciation charge on the equipment. This is different with each company and is a difficult item to estimate. Labor constitutes 50 to 60 per cent of the cost of operation.

Because diamonds are used for cutting the core and because they cost $110 to $150 per karat, the uninitiated get the impression that the cost for diamonds must be a considerable item. Unless some stones are accidentally broken, the cost of diamonds per foot of hole may be less than 1 cent per foot. Even allowing liberally for loss from breakage the cost for diamonds should not be more than 10 cents per foot of hole cored.

Cost Per Month

The most satisfactory way to figure costs is by using the cost per drill per month. This is the most invariable of all of the cost figures used and it is also the figure which can best be used for getting an idea as to the economical operation of the drills. Depending upon how depreciation and such charges are handled, the cost of operating a group of two or more drills will range from $1,800 to $2,300 per month per drill. The larger figure includes liberal allowances for depreciation and maintenance of equipment. The cost per drill per month does not vary a great deal even though the total footage drilled per month may vary widely. Using the figure of $2,200 per month do drill it is readily seen that the cost per foot depends upon the depth of hole, the proportion of hole "fishtailed," and amount of time lost. The greatest variable is the depth of hole "fishtailed," and this makes a figure for cost per foot somewhat unreliable as an index to the economy of operations.

There are larger features to this question of cost than are indicated in the paragraph above. The cost per foot may be as high as $2.50 for one month and yet be a more economical operation than the cost of $1.25 per foot for the month previous. The high cost per foot may be due to a large amount of coring and the drilling of several shallow holes as opposed to drilling a few deep holes in the case of the $1.25 per foot cost. Another factor which must be considered is the locations of the holes and the areas which can be proved with a minimum amount of drilling. By proper location of holes, it may be possible to prove an area with a much smaller number of holes than if the problem were not properly studied. The cost per acre may be low where the cost per foot of hole is high. It is obvious from this, that costs of any nature must be compared with a due regard for the factors involved.

The cost per month is the cost to be emphasized and it is the cost which must be allowed by anyone planning to undertake core drilling. This cost goes on regardless of the results obtained, and there is no assurance of anything except that this money must be paid out. Cost per foot of hole, cost per acre, and other unit costs, may be estimated very closely, once it is determined what the cost per month will be. It is possible to go into an area and know that so many feet of hole can be "fishtailed" and that so many feet of core will be required and that the total depth will be so many feet and thus arrive at a fairly good idea of the cost per foot of hole and the cost per acre. Another and entirely different area will probably have about the same cost per month but the cost per foot of hole and the cost per acre might be quite different.

The developments of the past year, outlined in a preceding paragraph, have greatly reduced the cost per foot of hole and have increased the efficiency of operations. Up to a year ago the average cost per foot of hole was $2 per foot. During the past year the average cost over several hundred thousand feet of hole, has been about $1.50 per foot. The total cost per drill per month, probably remains about the same as before. The reduced cost per foot is a reflection of deeper drilling, more efficient fishtailing, etc.

Results Obtained

There are no sure returns for the expenditure of the $2,000 or more per month per drill which a company incurs when it undertakes core drilling. By the law of averages, it is possible that a good return on the money spent in this way can be obtained, but it might be necessary to drill for several years before such returns would show.

Even though no productive structures are found all money spent for core drilling is not lost. Knowledge of the absence of favorable structure permits cancellation of leases and some money is saved in that way.

The example of Tonkawa, already cited, inspired most of the core drilling, but this success has been followed by others, until today, there is a considerable list of pools which have been discovered with the aid of the core drill. These include in Oklahoma:

The Thomas Pool in T. 25n, R. 2w; the Hubbard Pool in T. 26n, R. 2w; the North Braman Pool in T. 29n, R. 1w; the South Braman Pool in T. 28n, R. 1w; the Deep Rock Pool in T. 18n, R. 3e; the Hunnewell Pool in T. 29n, R. 2w. In Kansas are the Padgett gas field and the Graham Pool. All of these were discovered largely with the aid of the core drill. These discoveries would more than pay for all of the core drilling which has ever been done. Other areas which have been explored with the core drill and which are now being tested are : Section 19, T. 23n, R3w; 34-24-3w; 6-24-2w; 23-20-4e; 33-26-3w; 2-20-5w; 9-20-4w; 9-23-4w; 18-22-2w; 2-27-3w, and possibly many others.

It may be said safely that, from the economic point of view, core drilling has justified itself and paid large dividends, but there are individual users of the core drill who have made considerable investments and are yet waiting to get their returns. Under the present competitive system there is a great amount of duplication and consequent economic loss. Certain areas have been drilled by as many as six companies. It is getting commonplace to see two machines drilling at the same section corner.

As the more attractive areas are being drilled, leaving the less attractive areas for the future, it is quite likely that the results from now on may not be quite so encouraging as they have been. Drilling must of necessity be deeper and farther west, and in areas which have heretofore been looked upon with little favor.

CHARTERED IN OKLAHOMA

OKLAHOMA CITY, Okla., Apr. 3.—The Williams Gas Co. of Oklahoma City, capital $150,000, was chartered recently by Wilbur J. Holloman of Oklahoma and B. M. Williams, Jr., and Katherine B. Williams of Tulsa. A charter has been issued also to the Producers Oil Co. of Tulsa, capital $100,000; incorporators, George W. Snedden, J. W. Gilliland and M. D. Sanford, all of Tulsa. Permits to do business in Oklahoma have been granted to the Thomas Petroleum Corp. of Delaware, capital investment in the State, $60,000, and Sevreda Oil & Gas Co. of South Dakota, capital in the State, $20,000.

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NAVAJO RESERVATION TO BE OPENED FOR OIL AND GAS LEASES SOON

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Apr. 3.—The House Committee on Indian Affairs will within a few days favorably report H. R. 9,193 by which more than 22,000,000 acres, on executive order, Indian reservations, largely in the Navajo Reservation, will be opened for oil and gas leases. Also many titles to gas leases in the Navajo lands will be perfected. Eight members voted in the committee for the bill, five were against it and seven were absent. The Senate Committee on Indian Affairs is in full concord with the general terms of this legislation and will soon report a bill for the same purpose. The legislation is also favored by the Interior Department. This legislation will settle litigation over these lands now pending in the Supreme Court of the United States.

The bill will provide for inclusion of previously executed leases on the Navajo treaty lands within the provisions of the general leasing act which will continue the rights of lessees "as long as oil or gas is produced in commercial quantities" instead of for 10 years only.

It is likely that proposals will be advertised for by the Secretary of the Interior for additional leasing of the Navajo treaty lands within the near future and before the proposed law is enacted.

Confused Situation

There has been much confusion of mind in respect to the status of executive order Indian land in the Navajo Reservation. It should be clearly understood that these executive order lands were created by an executive order of the President of the United States whereby the Indians were granted the "use and occupancy" of said lands for the uses and customs of the Indians, viz: Grazing and agricultural purposes. But at no time has there been any right or authority for the executive to give away the title to any of the public lands, that right being exclusively in the hands of Congress.

The President is fully authorized under existing conditions or law to issue another executive order restoring to entry said lands which would take away from the Indians the right of use and occupancy now authorized under executive order. An organization of so-called Indian Defense has been attempting to force legislation by which Congress would recognize the so-called vested right or title to the lands in question, and in this way head off the lawsuits instituted by the United States Government to have settled in the courts the question of whether any title accrued to the Indians through the executive order as claimed by the Indian Defense Association.

The Government has already lost in one Federal court of Utah, the case having lately been carried to the Court of Appeals and is pending before the Supreme Court of the United States. The administration deserves great credit for its activities in carrying this question of title based on an opinion rendered by former Attorney General Stone through to the highest court which should go far in demonstrating to the country its sincerity and thoroughness as trustee and guardian of the Indians and help to offset the criticism and abuses being piled up against the Indian Bureau by the Indian Defense Association.

On May 17, 1884, President Arthur withheld from sale and settlement, several thousand acres of land in Arizona and Utah, as a reservation for Indian purposes. This withdrawal mentioned no particular purpose, other than as a "reservation for Indian purposes;" and named no particular tribe of Indians as beneficiary.

Applications for Permit

In the summer and fall of 1921 several applications for permit to explore lands within this withdrawal, for oil and gas, were filed in the Department of the Interior under the General Leasing Act of February 25, 1920, (41 Stat. 437) and after a formal hearing wherein were filed briefs by the Indian Bureau claiming the Leasing Act did not apply, and by the permit applicants claiming it did, the Secretary of the Interior, on June 2, 1922, rendered his decision (Harrison, 49 L. ed 139) holding that the Leasing Act applied, and the Department of the Interior thereafter issued several permits (20 in all) granting to the several citizens of the United States the right to drill and develop for oil and gas.

The lands covered by these permits are perfectly barren, unfit for human habitation, without water, and unoccupied even by Indians. (See opinion of United States District Court,—U. S. vs. Harrison, Equity 8288, District of Utah).

But the obligations of the permits, if to be fulfilled, required action by the permittees, and the story of their hardships in conquering the wilderness is graphically told in the record of that case. Suffice it to say here, that before drilling equipment could be landed on the ground, many miles of road had to be constructed, water had to be hauled in tank wagons a distance of 20 miles, and later water holes and reservoirs were built, cutting down the distance from 20 to 5 miles; machinery and heavy drilling materials and lumber had to be hauled 90 miles from Farmington, the nearest railroad point; camps were set up to house the workmen (many of whom were Indians); one well was drilled 800 feet and lost, and another drilled some 1,600 feet, when the work was stopped by an injunction of the Salt Lake United States District Court. When this happened the permittees had spent $270,000 in this enterprise. While the well was drilled on one of the permits, several permittees having adjoining permits participated in the expense of the exploration.

Held Act Inapplicable

In several instances applications for permits, though filed as early as those upon which permits were actually issued, could not immediately be clear listed by the department because of minor defects or conflict of acreage of one kind or another. In two cases applications for permits were filed in June and September, 1921, but permits were not issued because proposed power site locations on the San Juan River conflicted with the acreage covered by the applications for permits to the extent of a very few acres. And while this conflict was being adjusted, but before permits could be issued, the opinion of the attorney general holding the Leasing Act inapplicable, came out and the applications for permits were thereupon rejected. Several other applications for permit were pending in the department awaiting the clearing up of minor defects, which were afterwards rejected for the same reason.

Several such applicants, although not having yet received permits, and not knowing, of course, that there was any doubt about their ultimately receiving them, and long before (almost two years) the attorney general's opinion, joined with others who had already received permits, in exploring and developing enterprises on the acreage covered by their applications not related or connected with the development described in the preceding paragraph. These applicants, with their permit partners, spent their money in building roads and in work preparatory to actual drilling, in constructing water reservoirs and having geological and surface surveys made, and in erecting camps. These expenditures were all made by the applicants with a justified expectation of receiving their permits almost any day.

While this work was going on, the Department of Justice was looking into the question as to whether or not the Leasing Act could apply to these lands, and finally, in June of 1924 (almost two years after the work started on the permit exploration) the permittees and ap-

plicants for permit were notified that in view of an opinion of the attorney general, holding that the Leasing Act did not apply, no leases would be issued as called for in the permits, even if oil should be discovered.

Institution of Suit

In July, 1924, the United States brought suit in the United States District Court at Salt Lake—U. S. vs. Harrison—against the permittee where the well was being drilled, and a temporary injunction was obtained. The case was tried in that court early in 1925, and the court found in favor of the defendant and the case was dismissed; an appeal was taken by the United States to the Court of Appeals, where it is now pending, and it is understood that court has certified certain questions to the Supreme Court for decision. No decision can be expected under a year, and probably not for two years. In the meantime, the development of these lands is stopped, and the investment of these people, who have acted with unquestioned good faith toward the Government, is tied up. Not only is legislation needed because of the strong equities existing in favor of these citizens, but because also, if ultimately the courts should decide that the Leasing Act applies to these lands, the Indians would be entitled to no share whatever of the royalties, as that Act makes no provision for it. So that from the standpoint of applicants for permits, permittees, and Indians, some legislation should be enacted.

Questions at Issue

Questions certified to the Supreme Court by United States Court of Appeals for the eighth circuit are as follows:

1. Was there authority in the Secretary of the Interior to issue, under the provisions of the Leasing Act of February 25, 1920, (41 Stat. L. 437, 441, Comp. Stat., 1923 supp. Sec. 4640¼ss) the permit which the United States seeks to have cancelled in this suit? If this question be answered in the negative

2. Can this suit be maintained by the United States in equity to cancel the permit, it having been issued upon formal hearing by the Secretary of the Interior, no claim of fraud or bad faith being made, and the Government having brought no action to cancel the same for one year, ten months and nine days after its issuance, appellees Midwest Oil Co. and Southwest Oil Co. in that time having expended over $2,000,000 in developing the property for oil, which to them is a total loss if the permit is cancelled.

The Supreme Court will not reach these questions on its calendar until October, 1927, the result of which two years will be required to reach a decision. Therefore until that time there will be no possible development unless Congress passes remedial legislation.

Relief agreeable to the Interior Department and acceptable to oil operators, embodying 20 reinstated permits, are involved.

They are applications which "can show to the satisfaction of the Secretary of the Interior that he, or the party with whom he has contracted, has done all the following things, to wit: Expended money or labor in geologically surveying the lands covered by such application, has built roads for the benefit of such lands and has drilled or contributed toward the drilling of geologic structure upon which such lands are located."

Not more than six applications can qualify under this language. This language is agreeable to Assistant Secretary Finney, Assistant Secretary Edwards and to the Commissioner of Indian Affairs.

More than 400 applicants who have done nothing excepting file applications will receive no relief. No opposition is reported to the passage of the relief section (Section 3) of this bill. However, Mr. Collier asks (H. R. 10053 Mr. Frear and S. 3431 Mr. Cameron) that permittees and applicants be relieved upon the same conditions.

Agreed Upon Relief

The Indian Bureau has agreed to the relief of 20 permittees because the Government in the issuance of the permits entered into contractual relations with them. The Interior Department officials agree that in fairness these permittees should be allowed an opportunity further to explore and develop the geologic structures which cost them many thousands of dollars to discover and map geologically. No additional burdens should be placed upon them. Surely they should not be forced to collect witnesses, hire attorneys and go to other large expense in attending hearings to prove the performance of certains acts not yet incumbent upon them. In due course they must show to the department evidence of full compliance with the terms of the permits—permits already issued.

The very few applicants who may be afforded relief are on a different basis—they have not yet entered into contractual relations with the Government—but they have expended large sums of money in discovering, geologically mapping, preparing to develop and in developing the lands upon which they made application for permits.

The Utah Southern Oil Co. and the Utah Oil Refining Co. are directly affected by this item of relief to applicants. Some applications are as old as those for which permits given. They were held up because of conflict with power sites on the San Juan River—conflicts covering only a small portion of the lands covered by the applications—but nevertheless conflicts sufficient in importance to hold up the issuance of permits.

The Bratton Bill, S. 3159, and the Hayden Bill, H. R., were drawn by Mr. Finney in language that in Mr. Finney's opinion does not raise the question of title to executive order lands—were drawn so as not to raise the question of title. Mr. Collier said he would not oppose the relief bill if he felt sure the bill did not in any way change the status of the title.

The Bratton Bill gives the State 37½ per cent of the royalty in lieu of taxes—as does the General Leasing Act on public lands. The Collier Bill gives all the royalty to the Indians and is intended as a "gesture" by the Congress tending to recognize in the Indians the title to the executive order lands—using the language "Indian owner or owners" in referring to these lands.

The operators desire to keep entirely out of the controversy as to the disposition of the royalty. They ask that they be given permission to explore these lands under the terms of the Leasing Act, paying a royalty in lieu of taxes. In other words, having discovered these structures and the United States having given them a contract to explore them, they ask for permission to perform their part of the contract. The question of title to the lands, whether in the United States or in the Indians, should not be permitted, they contend, to prevent the passage of this legislation which will make possible a development that may prove of immense importance to Utah. There is at present (attorney general's opinion) no law under which these executive order lands may be explored for oil.

COLOMBIA PRODUCING 50,000 BBLS. DAILY

CHATHAM, Ont., April 3.—R. V. Le Sueur of Sarnia has returned from a 14 weeks' trip to South America, the greater part of the time being spent in Colombia at the plant of the Tropical Oil Co., a subsidiary of the International Petroleum Co. with which Mr. Le Sueur is connected. He states that the Colombia Field has a daily production of 50,000 bbls. of crude, practically double the production of the company's fields in Peru.

Development is being accelerated with remarkable rapidity, and at the present time the pipe line from Cartagena to Barranca is under construction. The 350 miles of line will be completed and pumping by the end of April and according to the plans of the company the transportation of oil will be under way in May.

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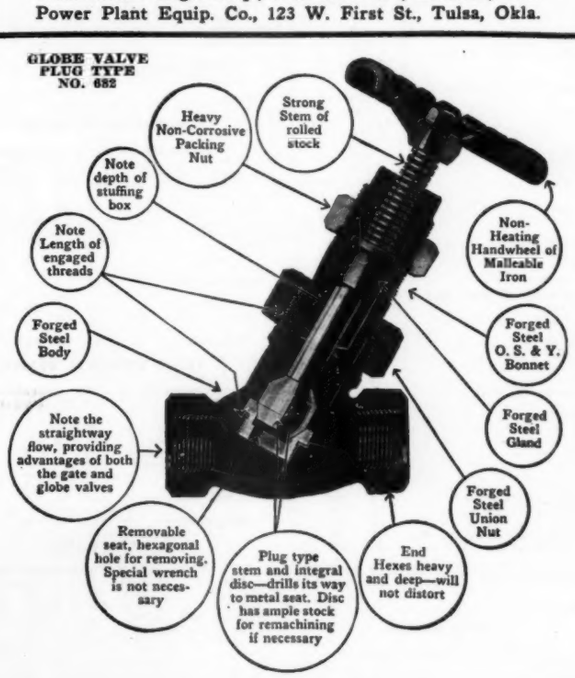
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Less New Field Work Started in March

More Wells Completed Than During February With Increase in Initial Production. Large Gain in Dry Holes

SUMMARY OF ALL FIELDS

Fields—	Comp.	Prod.	Dry	Gas
Eastern	289	2,425	36	67
Lima	30	495	1	2
Indiana	5	28	3	0
Central Ohio	35	514	11	18
Kentucky	61	580	18	0
Illinois	18	492	5	0
Kansas	211	17,310	74	6
Oklahoma	439	60,679	141	56
North Texas	500	35,483	201	11
East Central Texas	6	10	5	0
Arkansas	77	6,047	22	8
Louisiana	90	7,594	19	6
Gulf Coast	96	27,047	39	0
Southwest Texas	52	8,142	7	16
Wyoming	43	17,008	3	1
Montana	13	4,077	5	2
Colorado	5	430	2	0
New Mexico	22	910	8	0
Totals March	1,992	189,271	600	193
Totals February	1,689	146,784	482	175
Difference	303	42,487	118	18

Summary of New Work

Fields—	Rig	Drlg.	Total
Eastern	144	342	486
Lima	15	49	64
Indiana	4	32	36
Central Ohio	19	58	77
Kentucky	12	150	162
Tennessee	0	7	7
Mississippi	2	9	11
Alabama	0	4	4
Georgia	1	3	4
Illinois	7	41	48
Kansas	103	360	463
Oklahoma	226	1,020	1,246
North Texas	58	423	481
East Central Texas	5	27	32
Arkansas	22	100	122
Louisiana	16	99	115
Gulf Coast	49	135	184
Southwest Texas	24	72	96
Wyoming	35	268	303
Montana	17	140	157
Colorado	18	107	125
Utah	2	32	34
New Mexico	11	138	149
Totals March 31	790	3,616	4,406
Totals February 28	837	3,698	4,535
Difference	47	82	129

More wells were completed in all oil fields of the country, except California, during March than in the short month of February and the initial production of the new wells was 42,487 bbls. greater but new work showed a decline, there being 47 less rigs and 82 less drilling wells in March than in February.

OKLAHOMA FIELDS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Osage	54	6,325	6	5
Tulsa	13	55	5	5
Okmulgee	54	1,590	21	8
Seminole	10	4,391	2	0
Okfuskee	12	1,075	6	3
Hughes	14	717	10	0
Muskogee and Wagoner	15	170	7	4
Creek	46	8,126	17	4
Pawnee	25	958	8	0
Kay	30	10,073	9	4
Payne	13	5,378	1	5
Lincoln	37	9,077	5	0
Garfield	8	7,800	4	0
Grady	12	305	4	6
Stephens and Cotton	36	375	20	7
Carter	15	1,638	1	2
Jefferson	16	2,288	3	0
Miscellaneous	29	338	12	3
Total March	439	60,679	141	56
Total February	321	51,757	107	32
Difference	118	8,922	34	24

Summary of Rigs and Wells Drilling

County—	Rigs	Drg.	Ttl.
Osage	13	62	75
Tulsa	7	33	40
Okmulgee	24	60	84
Seminole	22	75	97
Okfuskee	9	57	66
Hughes	3	38	41
Muskogee and Wagoner	5	15	20
Creek	38	109	147
Pawnee	8	49	57
Kay	10	68	78
Payne	9	51	60
Lincoln	7	62	69
Garfield	14	70	84
Grady	8	24	32
Comanche	2	15	17
Pontotoc and Garvin	4	19	23
Stephens and Cotton	10	38	48
Carter	14	55	69
Jefferson	1	18	19
Miscellaneous	18	102	120
Total March	226	1,020	1,246
Total February	257	996	1,253
Difference	31	24	7

KANSAS FIELDS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Anderson	20	1,342	5	0
Butler	38	2,767	15	0
Chautauqua and Elk	10	60	4	4
Cowley	20	1,707	4	1
Greenwood	81	8,630	22	0
Lyon	12	1,130	7	0
Russell	12	1,599	1	0
Miscellaneous	18	75	16	1
Total March	211	17,310	74	6
Total February	208	9,137	65	14
Difference	3	8,183	9	8

Summary of Rigs and Wells Drilling

County—	Rigs	Drg.	Ttl.
Butler	15	56	71
Chautauqua and Elk	5	21	26
Cowley	7	47	54
Greenwood	49	74	123
Lyon	8	23	31
Montgomery	0	13	13
Russell	1	10	11
Sumner	1	13	14
Miscellaneous	17	103	120
Total March	103	360	463
Total February	100	401	501
Difference	3	41	38

NORTH CENTRAL TEXAS

Summary of Wells Completed

County—	Comp.	Prod.	Dry	Gas
Wichita	65	1,638	27	0
Wilbarger	52	5,660	10	1
Archer	158	5,875	66	0
Young	38	960	25	0
Stephens	20	4,205	4	4
Eastland	14	160	9	2
Brown	38	5,705	6	2
Callahan	7	250	4	0
Reagan	8	5,540	1	0
Hutchinson	8	2,955	0	0
Clay	5	20	4	0
Montague	10	585	1	1
Throckmorton	5	145	3	0
Shackelford	15	940	12	0
Coleman	13	0	13	0
Baylor	6	0	6	0
Haskell	2	0	2	0
Palo Pinto	3	0	3	0
Carson	1	250	0	0
Howard	1	10	0	0
Culberson	1	0	1	0
Tom Green	1	0	1	0
Crockett	1	380	0	0
Mitchell	3	200	0	0
Upton	1	25	0	0
Reeves	1	0	1	0
Moore	1	0	0	1
Wheeler	1	0	1	0
Collin	1	0	1	0
Total March	500	35,483	201	11
Total Feb.	342	17,329	129	4
Difference	158	18,154	72	7

Summary of New Work

County—	Rigs	Drg.	Ttl.
Wichita	2	34	36
Wilbarger	4	65	69
Archer	8	55	63
Young	1	8	9
Stephens	8	7	15
Eastland	1	11	12
Brown	11	46	57
Coleman	0	19	19
Callahan	0	8	8
Mitchell	1	7	8
Hutchinson	13	47	60
Shackelford	2	20	22
Reagan	1	18	19
Wildcats	6	78	84
Total March	58	423	481
Total Feb.	61	478	539
Difference	3	55	58

SOUTHWEST TEXAS

Summary of Field Operations

Dist.	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Luling	1	100	0	0	0	5	5
Laredo	17	6,200	2	8	6	17	23
Somerset	2	18	0	0	0	2	2
Calliham	3	0	1	2	0	2	2
Rockdale-Minerva	12	89	1	2	3	8	11
Jim Hogg County	8	360	2	2	4	11	15
Lockhart	3	650	0	0	3	6	9
Miscellaneous	6	725	0	2	8	21	29
Total Mar.	52	8,142	7	16	24	72	96
Total Feb.	45	11,851	11	6	14	56	70
Difference	7	3,709	4	10	10	16	26

EAST CENTRAL TEXAS

Summary of Field Operations

County—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Hunt	1	0	1	0	0	3	3
Nacum	1	0	1	0	0	1	1
Navarro	3	10	2	0	1	3	4
Limestone	1	0	1	0	2	7	9
Miscellaneous	0	0	0	0	2	13	15
Total Mar.	6	10	5	0	5	27	32
Total Feb.	7	150	5	1	4	26	30
Difference	1	140	0	1	1	1	2

GULF COAST

Summary of Field Operations

Dist.—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Boling	10	1,915	5	3	9	23	32
Bastrop	4	167	2	0	1	2	3
Barber Hill	0	0	0	0	1	0	1
Blue Ridge	1	0	1	0	0	2	2
Big Creek	2	600	1	0	1	2	3
Dayton	1	0	1	0	1	0	1
Damon Mound	0	0	0	0	1	0	1
Edgerly (La.)	1	0	1	0	1	2	3
Goose Creek	4	225	2	0	2	12	14
Humble	2	200	1	0	0	7	7
Hull	13	10,350	2	0	6	14	20
High Island	4	350	3	0	1	2	3
Jennings (La.)	4	115	0	0	0	4	4
Lockport (La.)	3	4,600	0	0	0	6	6
Markham	0	0	0	0	0	1	1
Nash	2	0	2	0	2	3	5
Orange	14	7,100	7	0	4	17	21
Pierce Jct.	3	400	1	0	1	2	3
Piedras Pintas	0	0	0	0	0	4	4
Spindletop	4	230	1	0	1	3	4
Saratoga	0	0	0	0	0	4	4
Sour Lake	8	145	3	0	4	4	8
South Liberty	0	0	0	0	2	0	2
Vinton (La.)	7	660	2	0	0	2	2
Miscellaneous	4	0	4	0	11	29	40
Total Mar.	96	27,047	39	3	49	145	194
Total Feb.	72	23,150	26	0	35	148	183
Difference	24	3,897	13	0	14	3	11

ARKANSAS

Summary of Field Operations

County—.	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl
Union	48	4,032	11	4	19	58	77
Ouachita	18	1,450	3	4	1	23	24
Nevada	4	550	2	0	1	8	9
Columbia	2	25	1	0	0	4	4
Ark. wildcats	5	0	5	0	1	7	8
Total Mar.	77	6,047	22	8	22	100	122
Total Feb.	72	6,741	22	8	42	119	161
Difference	5	694	00	0	20	19	39

NORTH LOUISIANA

Summary of Field Operations

Parish—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Bossier	2	25	2	4	0	5	6
Caddo	16	409	2	2	0	31	31
LaSalle	58	6,925	9	0	13	32	45
Ouachita	3	0	1	2	0	4	4
Webster	3	235	0	1	0	8	8
DeSoto	0	0	0	0	0	4	4
Moorehouse	0	0	0	0	0	2	2
Sabine	0	0	0	0	0	2	2
Winn	0	0	0	0	1	3	4
La. wildcats	6	0	5	1	1	8	9
Total Mar.	90	7,594	19	6	16	99	115
Total Feb.	50	5,107	16	6	53	134	187
Difference	40	1,487	3	0	37	35	72

WYOMING

Summary of Field Operations

Dist.—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Big Muddy	1	50	0	0	0	1	1
Salt Creek	31	15,198	0	0	19	38	57
Lance Creek	0	0	0	0	0	2	2
Big Horn Basin	3	475	0	0	3	56	59
Lost Soldier & Carbon Co.	4	400	2	1	3	34	37
Rock River district	1	190	0	0	0	13	13
Fremont Co.	2	695	0	0	1	36	37
Osage	0	0	0	0	5	11	16
Natrona Co.	1	0	1	0	0	10	10
Lincoln and Uintah Cos.	0	0	0	0	2	27	29
Baxter Basin	0	0	0	0	0	7	7
Miscellaneous	0	0	0	0	2	33	35
Total Mar.	43	17,008	3	1	35	268	303
Total Feb.	31	10,029	2	3	34	282	316
Difference	12	6,979	1	2	1	14	13

MONTANA

Summary of Field Operations

Dist.—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Sunburst	9	4,077	1	2	11	56	67
Cat Creek and Miscellaneous	4	0	4	0	6	84	90
Total Mar.	13	4,077	5	2	17	140	157
Total Feb.	11	4,085	3	0	23	135	158
Difference	2	8	2	2	6	5	1

COLORADO

Summary of Field Operations

Dist.—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Total Mar.	5	430	2	0	18	107	125
Total Feb.	3	1,860	0	0	19	106	125
Difference	2	1,430	2	0	1	1	0

UTAH

Summary of Field Operations

Dist.—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Total Mar.	0	0	0	0	2	32	34
Total Feb.	0	0	0	0	2	31	33
Difference	0	0	0	0	0	1	1

NEW MEXICO

Summary of Field Operations

Dist.—	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Total Mar.	22	910	8	0	11	138	149
Total Feb.	18	1,090	6	0	13	137	150
Difference	4	180	2	0	2	1	1

EASTERN FIELDS

Summary of Wells Completed

Field—	Comp.	Prod.	Dry	Gas
Allegany	18	37	0	0
Bradford	63	167	1	0
Middle Field	7	14	0	0
Venango-Clarion	22	23	1	3
Butler-Armstrong	11	38	5	1
Southwest Pennsylvania	11	0	4	7
West Virginia	87	524	13	45
Southeast Ohio	70	1,652	12	11
Total March	289	2,455	36	67
Total Feb.	294	2,242	44	74
Difference	5	213	8	7

Summary of New Work

Fields—	Rigs	Drg.	Ttl.
Allegany	6	17	23
Bradford	24	75	99
Middle Field	0	3	3
Venango-Clarion	4	12	16
Butler-Armstrong	7	16	23
Southwest Pennsylvania	11	28	39
West Virginia	57	134	191
Southeast Ohio	35	57	92
Total March 31	144	342	486
Total Feb. 28	122	341	463
Difference	22	1	23

CENTRAL OHIO

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Fairfield	1	0	1	0	0	0	0
Knox	1	0	0	1	1	2	3
Ashland	3	0	1	2	2	7	9
Medina	3	20	3	0	0	2	2
Lorain	2	0	0	2	1	7	8
Wayne	1	0	0	1	1	6	7
Holmes	7	329	3	1	1	19	20
Jackson	2	0	2	0	0	0	0
Athens	4	0	1	3	2	5	7
Coshocton	3	165	2	0	2	2	4
Guernsey	8	0	0	8	7	5	12
Cuyahoga	0	0	0	0	2	3	5
Total March	35	514	11	18	19	58	77
Total Feb.	30	278	5	18	23	54	77
Difference	5	236	6	0	4	4	0

LIMA FIELD

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Wood	2	105	0	0	6	7	13
Hancock	5	45	0	0	1	7	8
Allen	2	45	0	0	1	2	3
Auglaize	1	10	0	0	2	6	8
Sandusky	4	27	0	0	0	4	4
Mercer	4	41	0	1	0	2	2
Seneca	0	0	0	0	0	1	1
Lucas	0	0	0	0	0	2	2
Ottawa	3	24	0	0	0	5	5
Shelby	3	11	0	0	2	4	6
Darke	0	0	0	0	0	1	1
Hardin	5	122	1	1	0	3	3
Paulding	0	0	0	0	2	0	2
Michigan	1	65	0	0	1	5	6
Total March	30	495	1	2	15	49	64
Total Feb.	29	537	2	1	3	41	44
Difference	1	42	1	1	12	8	20

ILLINOIS

Summary of Field Operations

	Comp.	Prod.	Dry	Rigs	Drg.	Ttl.
Clark	1	3	0	0	2	2
Crawford	2	65	0	1	5	6
Lawrence	1	4	0	0	2	2
Wabash	12	415	5	3	21	24
Marion	1	3	0	0	1	1
Coles	0	0	0	0	1	1
Douglas	0	0	0	0	1	1
Jasper	1	2	0	0	1	1
Morgan	0	0	0	0	3	3
Fayette	0	0	0	1	1	2
Edwards	0	0	0	1	0	1
Randolph	0	0	0	1	1	2
Montgomery	0	0	0	0	1	1
Madison	0	0	0	0	1	1
Total March	18	492	5	7	41	48
Total Feb.	31	627	11	11	37	48
Difference	13	135	6	4	4	0

INDIANA

Summary of Field Operations

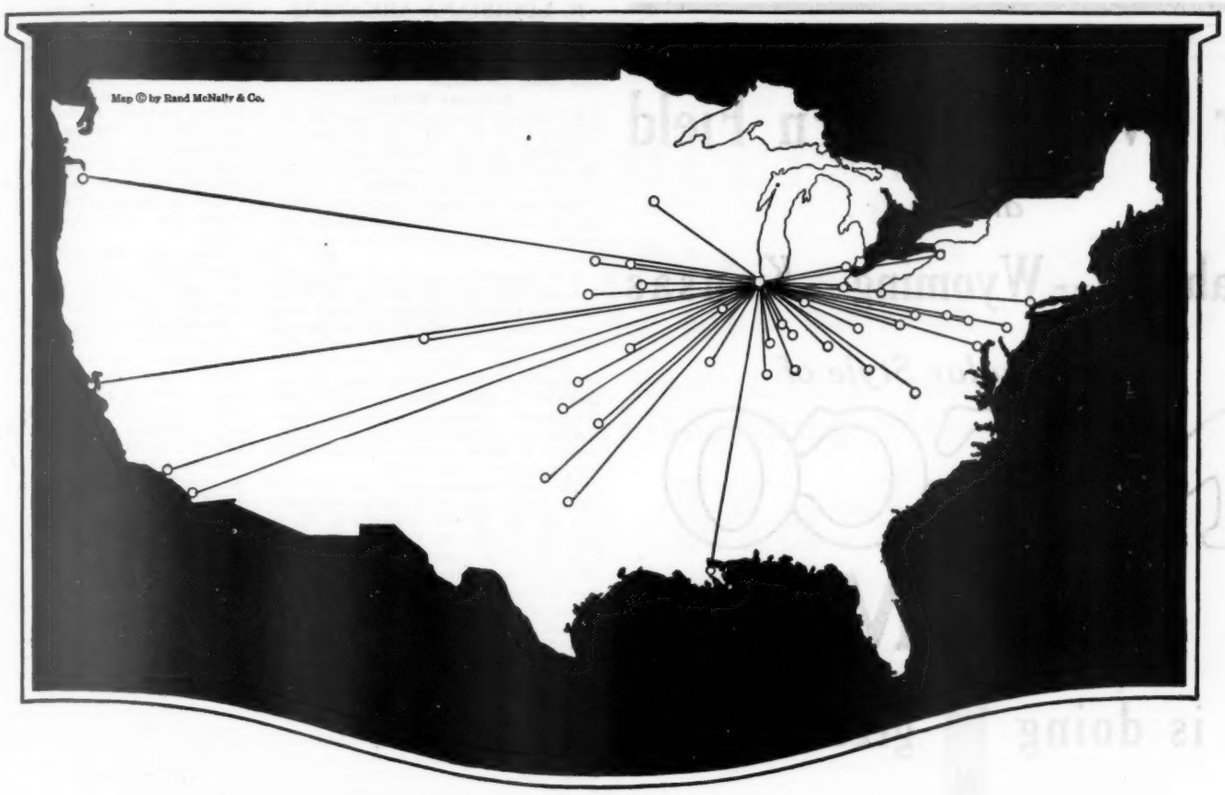
	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Wells	0	0	0	0	1	1	1
Jay	1	3	0	0	4	4	4
Adams	0	0	0	0	1	3	3
Delaware	0	0	0	0	1	1	1
Randolph	0	0	0	1	0	1	1
Pike	1	0	1	3	4	7	7
Sullivan	1	0	1	0	1	1	1
Knox	1	0	1	0	7	7	7
Allen	0	0	0	0	2	2	2
Daviess	1	25	0	0	3	3	3
Henderson	0	0	0	0	1	1	1
Jackson	0	0	0	0	1	1	1
Shelby	0	0	0	0	1	1	1
Lagrange	0	0	0	0	1	1	1
Vigo	0	0	0	0	1	1	1
Dubois	0	0	0	0	1	1	1
Total March	5	28	3	4	32	36	
Total Feb.	12	146	3	2	30	32	
Difference	7	118	0	2	2	4	

KENTUCKY-TENNESSEE

Summary of Field Operations

	Comp.	Prod.	Dry	Gas	Rigs	Drg.	Ttl.
Warren	8	7	6	0	0	14	14
Allen	2	2	1	0	0	12	12
Barren	13	133	3	0	0	33	33
Owensboro district	10	88	5	0	4	16	20
Cumberland-Monroe	1	75	0	0	0	17	17
Adair	0	0	0	0	0	1	1
Hopkins	0	0	0	0	0	1	1
Simpson	1	10	0	0	0	3	3
Green	0	0	0	0	0	3	3
Wayne	2	4	1	0	0	6	6
Lee-Owsley	1	100	0	0	0	10	10
Knox	0	0	0	0	0	2	2
Lawrence-Johnson	5	59	0	0	4	5	9
Johnson-Magoffin	7	64	1	0	3	6	9
Floyd	0	0	0	0	0	7	7

(Continued on Page 135)



BUDA FOLLOWS THROUGH

The Buda Company's interest in Buda engines does not end with shipment.

Throughout the United States, we have established Service Stations to aid in insuring the maximum service that is built into the product.

Among the advantages thus brought to the Buda user, is prompt and intelligent service on genuine Buda parts.

THE BUDA COMPANY, HARVEY CHICAGO SUBURB ILLINOIS

ESTABLISHED 1881

Buy only genuine Buda Parts for your Buda engine

BUDA
The
ENGINE

For Every Eastern Field

and in

Oklahoma -- Wyoming -- Kansas

The Regular Style of

NECO PUMP

is doing great work

And also in certain parts of Texas, Arkansas and Louisiana the type of working barrel Pump illustrated is providing better service and proving more popular as more and more companies, first test it, then adopt it as standard equipment.

A typical case of its service is found in the experience of the Mahutska Oil Company, who are using this pump on *all* their wells in Kansas. This company placed its first NECO in a well in which they were forced to change cups every day. That NECO worked for nine months before another cup had to be changed. Do you wonder that they use NECOS on *all* their wells now?

The Regular Style Neco Pump

In the NECO PUMP, the barrel is the moving part of the pump, instead of the plunger. The oil is drawn into the valve on the upstroke and discharged into the tubing on the downstroke.

NECO is the only pump operating in this way.

The lower valve is at the top of the plunger. On all other pumps it is at the bottom.

These two radically different *exclusive features* give NECO several advantages all its own which we would like to tell you about.

Ask us to.

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Northrup Equipment Co.

Parkersburg, W. Va.

Fort Worth, Tex.
F. J. Ackman
Representative

Nowata, Okla.
H. T. Torner
Representative

N. LOUISIANA-ARKANSAS

(Continued from Page 50)

tested salt water at 1,242-48 feet, and is shut down for orders.

Arkansas Wildcats

In Calhoun County, the Magnolia Petroleum Co.'s No. 1 Calion Lumber Co. is drilling through a water sand at 4,160 feet. Southern Crude Oil Producing Co.'s No. 1, Section 1-16-14, is drilling at 200 feet. In Clark County, the Whelen Oil Co.'s No. 1 Brown, Section 35-10-20, is drilling in hard shale at 2,215 feet.

J. E. Crosbie has a derrick up for No. 1 Jones, NE SW SE, Section 36-15-20, Columbia County. Hude and Aarnes' deep test in the same county, No. 2 Brown, Section 13-15-20, is drilling in red gumbo at 3,273 feet. Kentucky-Arkansas Petroleum Co.'s No. 1 Peter Doss, Section 29-19-20, is shut down at 1,860 feet. Hempstead County's single operation, Burton and associates' No. 1 Garland, Section 23-10-25, is shut down at 1,940 feet, because of high water.

The Gulf Refining Co.'s No. 1-E Red River, Section 10-19-24, has started drilling and the 10-inch casing was set at 160 feet. Jefferson County's sole test went out of the picture when the De Cou Oil Co.'s No. 1 Hinsley, Section 7-3-10, was abandoned at 1,830 feet, and the rig moved away. In Little River County, Mellick Oil Co.'s No. 1 Hawkins, Section 10-11-31, is drilling at 1,760 feet. Lenze and associates' Miller County test, No. 1 Dale, Section 25-15-26, is drilling in gumbo at 1,350 feet.

Urania Still Active

Continuing to be the stellar performer in either State, Urania finished the fiscal week with 17 completions. Ohio Oil Co.'s No. 4 Urania, Section 18-10-2e, led the list when it was completed making 1,000 bbls. naturally, 35 per cent salt water, from sand at 1,522-27 feet. Six-inch was cemented at 1,495 feet at No. 5.

J. S. Abercrombie and Co. took a spurt in activity in the field last week. Six-inch was cemented at 1,499 feet at their No. 1 M. M. King, Section 25-10-1e; No. 3 King, formerly reported as No. 2, is rigging up; a derrick is standing for No. 4, SE SE SW; a rig is up for No. 5, NE SE SW, and No. 6, NE SE SW is a derrick, and a derrick pattern is being built for No. 7, 660 feet west and 150 feet south of the NE cor. SE SW, Section 25.

Arizola Petroleum Co.'s No. 1 Tannehill, Section 36-10-1e, was completed in sand at 1,531-40 feet, and is making 100 bbls. naturally. The screen is being set at No. 2 Tannehill to test sand at 1,528-36 feet, and No. 4 Tannehill, SW cor. NW NW, is a derrick. Ten-inch casing was set at Atlantic's No. 3 Tullos, Section 26-10-1e. Ayers and associates' No. 3 Urania, Section 13-10-1e, is drilling at 1,200 feet. B. & B. Drilling Co.'s No. 1 Urania, Section 7-10-2e, is drilling at 1,000 feet.

The hole was lost at 1,000 feet at Carlton and Tharpe's No. 1 Kyle and Davis, Section 25-10-1e, and the rig was skidded 30 feet north and a new hole started. This test was formerly operated by Fergerson and associates. O. W. Clark's No. 1 Bass, Section 25-10-1e, is making 20 bbls. naturally from sand at 1,555-61 feet. The screen was set and the test is being swabbed to test sand at 1,556-62 feet at Clark's No. 2 J. D. Russell, Section 26-10-1e. Clark's No. 1 Russell, Section 25-10-1e, is being rigged up and his No. 3 Tullos, Section 23-10-1e, is drilling at 100 feet.

Dixie Oil Co. has a hole full of oil at No. 4 Urania, Section 24-10-1e, from sand at 1,562-68 feet, and is waiting for a standard rig. Six-inch casing is being lowered to 1,510 feet at Explorers Oil Corp.'s No. 1 Keith, Section 36-10-1e. Six-inch was cemented at 1,508 feet at Galloway and associates' No. 3 Pendarvis, Section 23-10-1e. J. Q. Graves' No. 1 King, Section 25-10-1e, is drilling below the 1,460-foot level. Hamilton and associates are swabbing 400 bbls. daily from their No. 3 Bennett, Section 25-10-1e, which is in sand at 1,529-37 feet.

Hunt and associates completed two wells in Urania last week. Their No. 3 Tullos heirs, Section 26-10-1e, is making 75 bbls. on the pump from sand at 1,490-96 feet, and No. 4 is making 100 bbls. naturally in sand at 1,474-79 feet. Hunt and associates' No. 5 Tullos heirs, Section 26-10-1e, is drilling out the cement plug at 1,492 feet. Hunt, McCurry and Zoder's No. 1 Winberry, Section 18-10-2e, is flowing 25 bbls. daily in sand at 1,512-15 feet. S. S. Hunter's No. 2 Louisiana, Section 27-10-2e, is shut down at 370 feet while the rig is being repaired.

Jones and Womack's No. 1 Perrin, Section 26-10-1e, is in sand at 1,550-57 feet, and is flowing 100 bbls. daily through 2-inch tubing. H. M. Jones' No. 4 Russell, Section 25-10-1e, is in 8 feet of sand topped at 1,534 feet, and found a showing of oil along with some salt water. The test is shut down waiting for a standard rig. Louisiana Oil Refining Corp. completed a brace of wells on its Tremont lease. No. 29-B, Section 25-10-1e, is flowing 25 bbls. daily from sand at 1,532-40 feet, and No. 30-B is flowing 30 bbls. daily from sand at 1,518-23 feet.

Louisiana's No. 4-A Tremont, Section 28-10-2e, is drilling at 1,200 feet and the 10-inch was set at 103 feet at No. 5-A Tremont in Section 35-10-1e. Little River Oil Co. has a derrick pattern built for No. 1 Ratcliff, Lot 9, Block 8, Section 26-10-1e. Love and associates have started drilling at their No. 2 Zimmerman, SW cor. NE SW, Section 25-10-1e. McWilliams and Foster's No. 1 J. D. Russell, Section 25-10-1e, is waiting for cement to set at 1,527 feet, and a rig is up for their No. 2 Russell, NE cor. N half NE NW SE. Minnesota Oil Corp.'s No. 1 J. M. Cotton, Section 25-9-2e, has started drilling. Mistrot and associates' No. 1 Russell, Section 26-10-1e, is being bailed to test sand at 1,537-43 feet.

Mitchell and associates completed a good well in their No. 1 Herbert, Section 26-10-1e, which is flowing 800 bbls. daily from sand at 1,531-40 feet. Natural Gas and Fuel Co.'s No. 1 T. Russell, Section 26-10-1e, is making 150 bbls. of fluid on the pump, 50 per cent salt water, from sand at 1,576-78 feet. Same operators' No. 4 H. Tullos, Section 26-10-1e, is in 8 feet of sand topped at 1,508 feet, and is making 75 bbls. naturally. Six-inch was cemented at 1,545 feet at No. 4 T. Russell, Section 26-10-1e, and the six-inch was cemented at 1,524 feet at No. 1 Frank Tullos, same section. No. 2 H. Tullos is shut down at 1,485 feet waiting for a standard rig, and No. 3 has started drilling. Natural Gas and Fuel Co. has a derrick standing for No. 5 Urania, 180 feet south and 900 feet west, NE cor. NW SE, Section 26-10-1e, and their No. 1-B Urania, Section 18-10-2e, has been temporarily abandoned at 1,046 feet.

Nelson and associates' No. 1 Bryant and Harvey, Section 26-10-1e, is drilling at 350 feet. Ozley and associates' No. 1 fee, Section 25-10-1e, is drilling at 475 feet. Six-inch casing was cemented at 1,517 feet at Roberts and associates' No. 2 Russell, Section 25-10-1e, and No. 3 Russell is being rigged up. Ten-inch casing was set at 103 feet at Rowe and associates' No. 1 Urania, Section 5-10-2e, and the hole is being sent on down.

Standard Drilling Co.'s No. 2 Clinton, Section 26-10-1e, is swabbing 100 bbls. of oil daily from sand at 1,540-54 feet. The 6-inch casing was cemented at 1,530 feet at Sherman and associates' No. 1 Russell, Section 25-10-1e. Standard Oil Co.'s No. 3 Urania, Section 19-20-2e is waiting for the cement to set at 1,552 feet, and the 6-inch was cemented at 1,517 feet at the Standard's No. 5 Urania, Section 13-10-1e.

Sterling Corp.'s No. 1 Wimbley, NE cor. NE NW, Section 18-10-2e, is a derrick pattern. Trio Oil Co.'s No. 1 Urania, NW cor. SW NW, Section 19-10-2e, missed the sand and was abandoned at 1,607 feet. The Trio's No. 2 Urania, NE cor. NW SW NW, Section 19-10-2e, is a derrick. George W. Wetherbee's No. 1 Norris, Section 25-10-1e, was finished in sand at 1,532-36 feet, and is flowing 20 bbls. daily. Wetherbee's No. 1 H.

Producers!

Zero Hour Vitroid Shell

Companion of Zero Hour Electric Bomb In Reducing Your Shooting Risks—

Is on the Market!

///

ANOTHER source of peril and danger in shooting oil wells has been conquered—the old tin glycerine shell, whose only claim to respect was its age. It has given way before the irresistible march of Science. It has gone the way of the horse and buggy; the sickle; the kerosene lamp. Old "Tinshell" was never anything but a container—had no other advantage and many disadvantages. It had to give way to a shell that will SAFELY HOLD nitroglycerine; that will minimize one of the dangers of shooting; that will multiply the beneficial results of shooting—Zero Hour Vitroid Shell!

This companion of Zero Hour Electric Bomb is now on the market! Zero Hour Vitroid Shell and Zero Hour Electric Bomb are the only positive advances made in shooting methods in sixty years.

Zero Hour Vitroid Shell

Made of Non-Metallic Composition

Totally Eliminates Frictional Spark
—which, in the case of tin shells, causes premature discharge and damage to well.

Reduces Frictional Heat
—which tin shells often develop while being lowered, resulting in premature discharge.

Stronger Than Tin
Less liable to puncture and consequent leakage.

Non-Soluble in Oil or Water

Completely Shattered Under Discharge
No residue to "bridge" in casing or becomes a source of annoyance or delay in cleaning out.

Zero Hour Electric Bomb

A Scientific Detonator
Electrically operated and time controlled.

Prevents Premature Discharge
—in casing; a common occurrence with Jack Squibs.

Assures Certain Discharge
—at the specified time; from one to eleven hours after placing.

Completely Shattered Under Discharge
Mechanism enclosed in cast iron shell. Completely shattered at discharge—nothing left to form "bridge."

Gets Well on Production Quickly
Contributes to a clean hole, increasing the possibility of a well cleaning itself and being placed on production quickly.

ZERO Hour Electric Bomb has accomplished everything its originators claimed—it has reduced shooting risks and multiplied the beneficial effects of shooting. Yet Zero Hour Electric Bomb ALONE was not enough. There was another danger in shooting beyond the power of the Bomb to minimize—the use of tin shells in lowering the nitroglycerine. To minimize this known, controllable shooting risk Zero Hour Vitroid Shell has been developed. Its use in connection with Zero Hour Electric Bomb will tend to eliminate every controllable risk in oil well shooting.

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LESS THAN ZERO HOUR PROTECTION IS NO PROTECTION AT ALL!

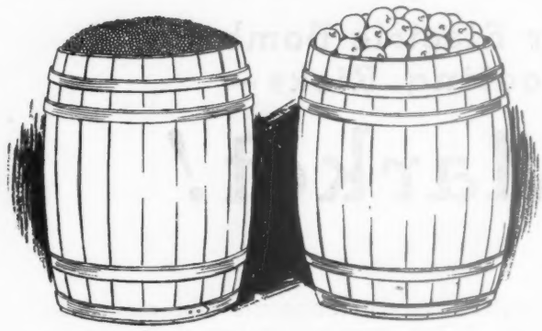
Fullest Absorption

comes from

large froth volume

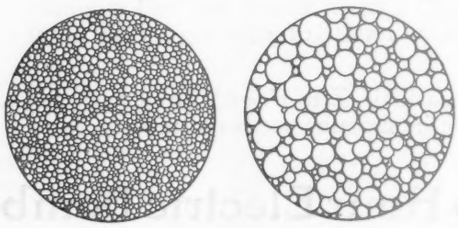
consisting of

billions of tiny, active bubbles



A barrel of peas contains little dead area.

A barrel of apples contains much dead area.



Fine froth in Campbell Absorbers embodies a vastly larger amount of oil in making up the films surrounding these bubbles than is contained in a foam made of larger bubbles. Hence greater power of absorption.

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Tullos, Section 26-10-1e, is drilling at 1,500 feet. Williams Drilling Co.'s No. 2 Herbert, Section 26-10-1e, was completed for a 30-bbl. natural well in sand at 1,554-60 feet, and the 6-inch was cemented at 1,513 feet at No. 3 Herbert. Youngblood and associates' No. 1 W. O. W., Section 25-10-1e, is a derrick pattern.

Bossier Parish

In the Bellevue Field, Osborne and associates' No. 2 McDade, Section 28-19-11, was abandoned at 904 feet. Autrey and associates' No. 1 Snyder, Section 22-19-11, is waiting for a standard rig at 423 feet. The same operators have a rig up for No. 2 Connell, SW N half NE SE, Section 15-19-11. George W. Wetherbee's No. 1 Smith, Section 23-19-11, is drilling at 300 feet.

Arkansas Fuel Oil Co.'s No. 1 Murray, Section 14-23-14, is drilling in shale at 2,737 feet. Benton Syndicate's No. 1 Bulkley, Section 9-20-13, is shut down for fuel at 1,182 feet. Henderson and associates' No. 1 Burckhalter, Section 17-18-11, is being rigged up. Palmer Corp.'s No. 10 Caplis, Section 25-16-12, is drilling at 765 feet. Arrangements are being made to set 6-inch casing at 2,544 feet at Woodley and Collins' No. 1 Kilburn, Section 18-19-13.

Caddo Parish

Caddo Parish presented a disappointing completion report during the past week and wildcatting continued to hold the attention of oil men. Gulf Refining Co.'s No. 227 Ferry Lake, Section 16-20-16, was a failure at 2,311 feet and was abandoned. The Gulf's No. 7 J. H. Herndon, Section 15-21-15, was completed for a 5-bbl. pumper at 1,476 feet.

Arkansas Natural Gas Co. cemented the 10-inch casing at 2,400 feet at its No. 1 C. W. Lane, Section 13-21-15. H. P. Burford's No. 1 Dambley, Section 2-20-16, is a derrick. H. J. Bussa is arranging to test sand at 1,030-50 feet at No. 1 Hardeman, Section 24-22-15. Dixie Oil Co.'s No. 6 Donovan, 665 feet east and 160 feet north of the center of Section 21-22-15, is drilling below the 790-foot level.

Dixie's No. 1 Jolly, Section 27-22-15, went out of the lime formation and is drilling in gumbo at 3,945 feet. Dixie's No. 71 Robertshaw, Section 14-21-15, is drilling at 2,819 feet. The tubing is being lowered to 1,701 feet at the Dixie's No. 73 Robertshaw, Section 11-21-15, and a derrick is standing for No. 1 Muslow, 350 feet south and 100 feet east of the center of Section 7-20-15. Double I. I. O. Co.'s No. 5 Wadkins, Section 27-21-15, is waiting for a standard rig at 1,630 feet, and has 300 feet of oil in the hole.

Gulf Refining Co.'s No. 1 J. M. Byrd, Section 2-19-14, which is to be a 4,500-foot test, is about ready to start drilling. Gulf's No. 4-U L. B. Caddo, Section 16-20-16, is drilling at 160 feet, and the 6-inch was cemented at 2,150 feet at No. 229 Ferry Lake, Section 15-20-16. No. 230 Ferry Lake, Section 16-20-16, is being rigged up.

Gulf's No. 17 Lane, Section 13-21-15, is boring through hard blue shale at 3,645 feet, and its No. 1-E Muslow, Section 35-21-15, is grinding through blue shale at 2,460 feet. Gulf's No. 12 Tyson, Section 14-21-15, is drilling out the plug at 2,406 feet. Mrs. N. M. Hancock's No. 2 Hampton, Section 15-21-15, is shut down at 1,710 feet waiting for a standard rig. Lewis Oil Corp.'s No. 6 Vespy, Section 15-21-15, is to be put on the pump at 1,585 feet.

Magnolia Petroleum Co. shot the 4½-inch casing at 2,969 feet at No. 2 Levee Board, Section 8-20-15, and is now fishing for the shooting line. The total depth of the hole is 4,023 feet. Magnolia's No. 23 Raines, Section 22-21-15, is drilling at 1,140 feet and is still trying to set the 8-inch at 2,451 feet at No. 1 Wiley Bradford, Section 24-21-15.

Maine Drilling Co.'s No. 1 Cunningham, Section 15-17-14, is shut down for fuel at 1,750 feet. O'Dell and Lawton's No. 6 Red Bayou, Section 15-21-15, is waiting for the cement to set at 1,350 feet. Ohio Oil Co.'s No. 1 J. S. Ardis, Section 1-21-15, is coring hard lime and shell at 4,058 feet and Ohio's No. 18 E. K. Smith, Section 12-21-15, is coring lime and shale at 3,864 feet. Page and Caldwell resumed drilling at their No. 1 Hobbs, Section 29-21-15, and drilled to 1,700 feet and shut down again.

S. L. Rickett's No. 12 L. B. Caddo, 930 feet north and 750 feet east of the SW cor., Section 23-22-15, is a derrick. B. L. Spell's chalk rock test, No. 1 Thigpen and Herold, Section 10-21-16, is drilling at 1,003 feet. Standard Oil Co.'s No. 11 J. J. Hart, Section 34-21-16, has been temporarily abandoned at 2,379 feet. The Texas Company's No. 42 C. M. L. Co., Section 23-21-15, is drilling at 2,752 feet. A derrick is standing for The Texas Company's No. 1 Ellerbe, Section 21-15-12, and its deep test, No. 1-B Bayou, Section 15-20-16, is going through gray lime at 4,204 feet.

The Texas Company's No. 60 Levee Board, Section 33-21-16, is bailing to test sand at 1,828 feet, and No. 61 Levee Board is a derrick. No. 12-B Noel, Section 14-21-15, is drilling below the 1,200-foot level. No. 11 Russell, Section 3-20-16, is drilling in sand at 2,272 feet. In Section 4-21-16, its No. 57 Harrell, is drilling below the 1,550-foot level and No. 52 Harrell, Section 12-21-16, is drilling in sand at 1,055 feet.

Claiborne Parish

Gilliland Oil Co.'s No. 10-B Taylor, Section 14-23-8, which is to be a Trinity sand test, is a rig. Standard Oil Co.'s No. 4 Shaw, Section 30-21-7, is to be deepened from 2,068 feet. Triangle's deep test, No. 1 Keen, Section 7-19-5, is coring lime at 3,987 feet.

DeSoto Parish

Dixie Oil Co. is underreaming the 6⅝-inch casing to 3,500 feet at No. 1 Jenkins, Section 9-12-11. Carl K. Dresser's No. 1 Williamson is drilling below the 200-foot level. L. V. Ulrey has a rig up for No. 1 Heard, NW cor. NE, Section 18-12-12.

Webster Parish

Alabama Petroleum Co. is rigging up at No. 3-B Robbins, Section 21-21-10. Arkansas Natural Gas Co. cemented the 6-inch at 2,612 feet at No. 1 Miller, Section 30-23-9. Gulf Refining Co.'s No. 2 S. P. D. Coyle, NE cor. NW NE, Section 21-21-10, is a rig. Magnolia Petroleum Co. drilled to 4,281 feet at No. 1 Bible, Section 8-20-9, and cemented the 6-inch casing at 4,265 feet. Ohio's No. 37 Bodcau, Section 21-21-10, is drilling through gumbo at 2,300 feet. Ohio's No. 1 Cox, Section 23-21-10, is coring a hard sandy shale at 4,791 feet, and a derrick has been built for No. 3 Holloway, Section 23-21-10, another deep test. Ohio's No. 6 Sidney, Section 16-21-10, is in sand at 2,531-36 feet, with 700 feet of oil in the hole and waiting for a standard rig. Smitherman and McDonald's No. 1 Oakley, Section 29-33-11, is being delayed by a fishing job at 1,900 feet, where five joints of the drilling stem were lost. Alabama Petroleum Co. added the only new producer to Cotton Valley last week with its No. 1-B Robins, Section 21-21-10, which is pumping 100 bbls. daily from sand at 2,566-72 feet.

Louisiana Wildcats

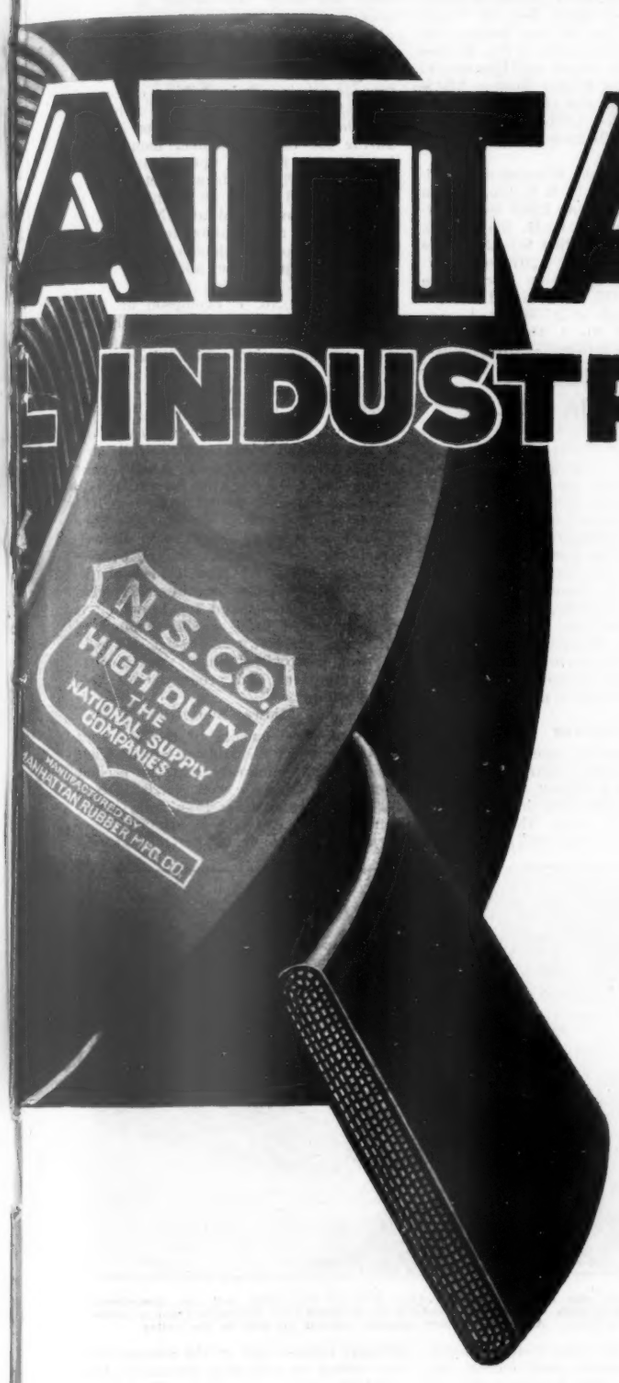
Standard Oil Co.'s No. 1 E. E. Albritton, Section 27-10-1e, in Winn Parish and west of the Urania Field, was abandoned in gumbo at 1,815 feet. Cherokee Petroleum Co.'s No. 1 Urania, Section 13-11-1e, is drilling at 1,286 feet and J. H. Hall's No. 1 Eagles, Section 6-10-2w, Winn Parish, is shut down at 1,050 feet.

In Grant Parish, Dowling and McCurry's No. 1 Holmes, Section 20-9-1e, has been temporarily abandoned at 1,616 feet, and their No. 1 Swope, Section 18-19-1e, is drilling at 1,475 feet. Finn and associates' No. 5 Ball and Cody, Section 13-8-1w, is a rig. In Lincoln Parish, Buckley and Palmer's No. 1 Davis, is drilling through gumbo at 1,650 feet, and The Texas Company's No. 1 Tremont, Section 27-18-1w, is grinding through shale and rock at 1,410 feet.

Boisseau and associates' No. 1 Sullivan, Section 11-21-7e, Morehouse Parish, is finding it difficult to get through a rock formation. Only 15 feet of hole was made during the past week and the bit is still in rock at 2,545 feet.

In Ouachita Parish, the Central Co.'s No. 1 Cole, Section 35-20-4e, is drilling

ATTAN
INDUSTRY



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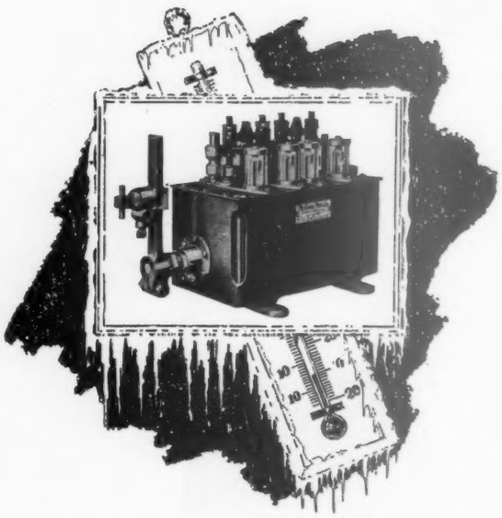

WHEN the thermometer drops to zero and the oil in the pipe lines congeals, it is human nature to forget the usual oiling or to neglect to give it the added attention required at this time. The result is that scored cylinders and frozen bearings prevail, tying up production.

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below the 100-foot level. Six-inch casing was cemented at 2,178 feet at Ladell and associates' No. 33 fee, Section 36-19-4e. Palmer Corp.'s No. 2 fee, Section 24-19-4e, is being rigged up. Pioneer Oil & Gas Co.'s No. 1 Filihol, Section 11-18-4e, is waiting for the cement to set at 2,170 feet. United Carbon Co.'s No. 1 Wilson, Section 24-20-4e, is drilling at 450 feet.

In Rapides Parish, Wheeler and Wilbanks' No. 1 Lanier O. & L. Co., Section 3-4-3e, is shut down at 1,300 feet, waiting for 8-inch casing. L. M. Emlet's No. 5 H. L. Bowman, Section 9-7-12, Sabine Parish, is shut down at 3,267 feet, waiting for casing. In Union Parish, the Arkansas Fuel Oil Co.'s No. 1 Reeves is drilling in gumbo at 2,700 feet. Louisiana Power Co.'s No. 1 Thompson, Section 16-20-3e, is drilling ahead at 2,100 feet.

CALIFORNIA FIELDS

(Continued from Page 54)

Standard is working with four drillers on its Lease B and two on the Bolsa Chica property, in addition to its test well, No. 1 Newland, at present drilling ahead at 4,050 feet. The residents of Huntington Beach will decide on April 12 whether or not the present restricted zone will be opened up for development work and, while it is quite possible that the restrictions will be lifted, the issue is still in doubt. There is considerable opposition to further drilling within the city limits and for this reason it would not be surprising if the issue was defeated at the polls.

Fullerton

The Shell is starting several additional wells in the Fullerton district and it is thought that the company will be running six strings of tools in that area within the next 30 days. The Shell finished several big flowing wells at Fullerton during the past year and will probably bring in several more during the coming summer. The company has at present two drillers on the Orange lease, one of which has just been spudded in, and rigs going up for two more, Nos. 12 and 13. No. 4 Fisher has just been spudded in and it looks as though work will start on No. 5 Pico within a short time, as rig material is already on the ground. The Union is running three strings of tools in this district all located on the Stearns property. In addition to these drillers, the company has two wildcats, No. 1 Olinda at 3,468 feet and No. 2 on the same property at 2,756 feet.

The Standard is at present concentrating its drilling operations in the Montebello Field where the company has three drillers on the Baldwin lease, one on the Harvey, one on the Howard-Smith and a projected test on the Temple lease. The McGinley Oil Co. has two drillers to its credit in this field, the St. Helens Petroleum, three and the Union, one. E. L. Blanton's No. 1 Gualdine at Coyote looks good for about 60 bbls. daily from 3,080 feet, after being plugged back from 3,158 feet, but since the output is cutting around 20 per cent water it will probably require some further work before clean production can be anticipated.

Operators in the Richfield district have been increasing their drilling operations from time to time and this field will probably show a material increase in work during the coming summer months, unless a new field is opened up in the meantime. The California Petroleum is drilling ahead in No. 18 Yarnell, No. 11 Richfield Consolidated and No. 2 Krug and, since a rig is going up for No. 19 Yarnell, it looks as though the company expects to undertake additional work. The General Petroleum has one driller in this field, No. 7 Thompson at 1,200 feet, but is rigging up rotary equipment in No. 6 Stern. The Standard is in about the same position, having one driller on Kraemer Lease No. 2 and a rig going up for No. 1 Anaheim.

The Marland resumed drilling on No. 1 Bixby at Seal Beach and passed out of the oil sand which was partially productive around 4,830 feet. At the present depth, 4,915 feet, the formation is a barren gray sand, the same as found by the Shell at a similar depth. The Shell is steadily at work with No. 4 Bryant, considered a very important well because of its position, but it will probably be several weeks before anything is picked up. The small demand for heavy oil is being reflected in a smaller amount of drilling in the Newport district and work in this area will probably continue to be intermittent and productive of very small pumpers.

Midway-Sunset

Recent developments in the Maricopa Flats section of the Midway-Sunset Field have tended to indicate that the production of the Obispo's well No. 6, is coming from a lens rather than from a well defined oil zone. Several attempts have been made to duplicate the Obispo's well without success and at the present time the outlook for additional production does not look any too promising. The Obispo Oil Co. will spud in another deep test within a short time and this hole, together with two drillers of the California Petroleum in Section 32-12-23, which have been standing suspended around the 4,000-foot level, may throw considerable light on the subject.

This picture shows the Bolsa Chica Oil Co.'s test on the right and the Associated Oil Co.'s No. 3 Hartman, on the left, looking in a northwest direction from a point on the Lloyd lease. A lemon orchard appears beyond the rigs in the valley.

The Julian Petroleum made a deal several months ago with the Midway Northern Oil Co. for development of the Obispo zone underlying the latter's property but is now making preparations to complete its first well in the upper sand, believing that the lower horizon does not warrant further development at the present time. There are one or two other wells in the same section as the Obispo's producer and it may be possible that early tests will be made.

Alexander Anderson was called upon to make an underground survey a short time ago of the Kendon Petroleum Co.'s No. 8 in the Hovey Hills and he reports that it was 427 feet off the perpendicular and that the well has apparently missed

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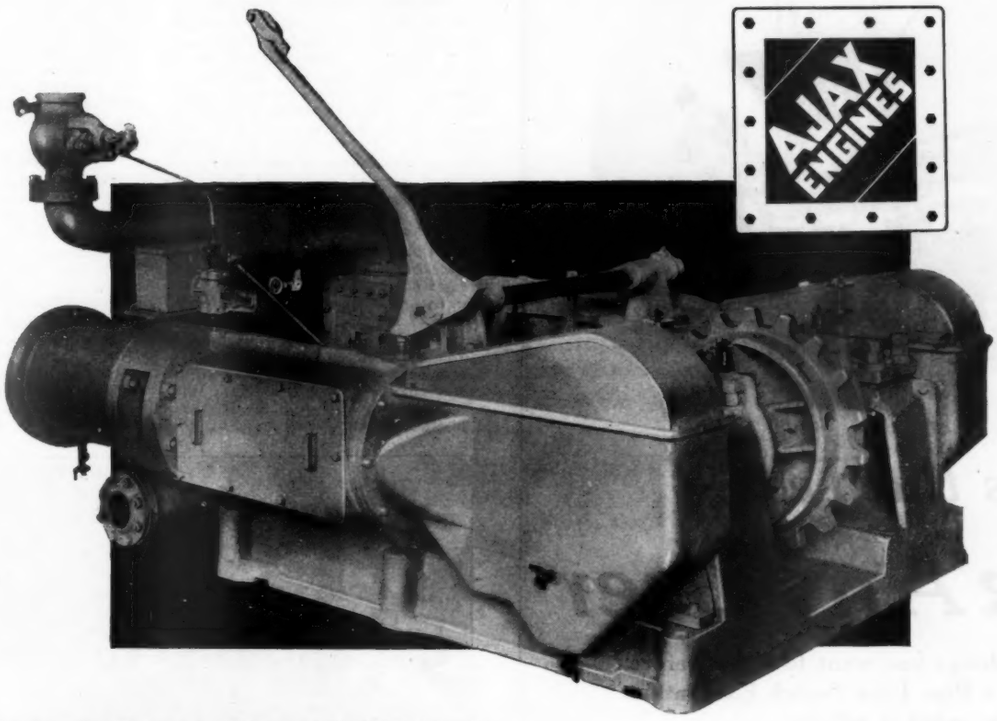

THE new Ideal Ajax 12x12 Twin Drilling Engine lifted over 49,000 lbs. of pipe and tools 200 ft. per minute during its field test. The engine developed over 300 horse power.

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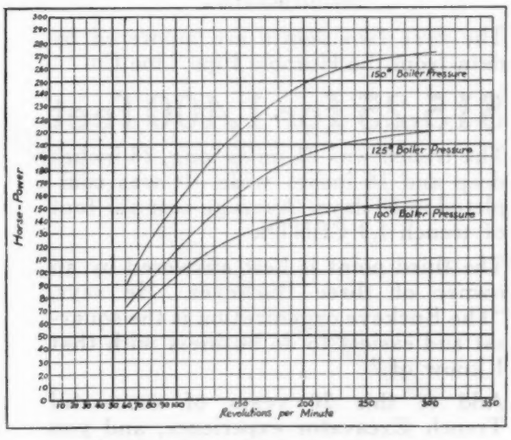

In a brake test using 150 lbs. boiler pressure, the New Ideal Twin develops 272 h.p. at 300 r.p.m. Operated under the field practice of 200 lbs. boiler pressure its peak would be much greater—ample power for the deepest drilling.

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the main body of oil sand. The company will, as a result, plug this well back to the 1,100-foot level in order to get shallow production and start another hole. The Union's No. 13 in the Elk Hills Field, Section 26-30-24, is at present making 300 bbls. of rather dirty oil from 3,586 feet but it will probably clean up within a short time.

Southern California Wildcats

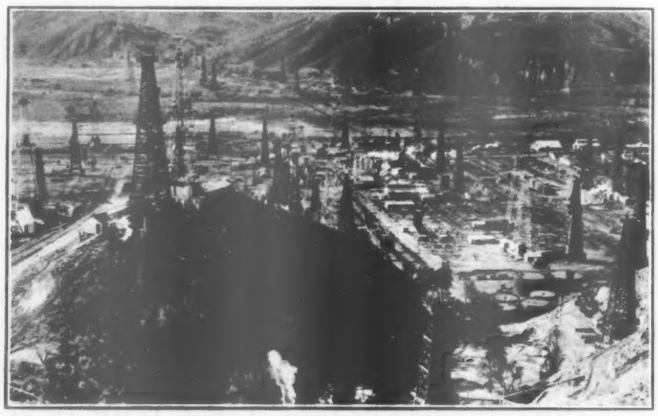
W. M. Keck of the Superior Oil Co. has taken over the Russell Petroleum's No. 1 Joughin, a likely looking test in the Chatsworth area, and will endeavor to bring it into production on a royalty basis. The well was cemented some time ago at 4,170 feet and it is just being drilled out. The Standard has secured some protective area in the vicinity but no great amount of leasing has taken place, although the Russell's well encountered some very good looking showings.

The Union's No. 1 McNally, a wildcat at La Mirada, is rotating ahead in a blue shale at 4,345 feet and, since there have been no showings reported to date, the outlook is not any too promising. The Marland's No. 1 Connolly at Hyde Park is equally discouraging at 4,390 feet but the company will, nevertheless, continue drilling and make a conclusive test. Wildcatters are still leasing in the Hermosa-Manhattan Beach territory and it looks as though this area will come in for some additional play during the coming summer months. In view of the oil showings found this area certainly warrants a thorough test and, judging by the equipment being put in by George W. Johnston, he is going to be the one to do it. The Julian Petroleum has staked a location for another test in this area but, since there is no material on the ground, it is unknown just when drilling will get under way. The company's first wildcat in this area, No. 1 Hellman, is standing cemented at 741 feet but will be drilled out within the next few days. Bardeen re-entered the Manhattan-Pacific's abandoned wildcat in this district and he is making preparations to plug back from 4,080 feet to around 4,000 feet, from which depth he expects to make a production test.

Water trouble prevented the Marland from making a conclusive production test on No. 1 Wickham in the Santa Susana quadrangle and the company will put in another cement plug. The well was originally drilled to 2,717 feet but later plugged back to 2,695 feet. The Milham Exploration Co.'s No. 2 Conroy in Section 11-4-16, is rotating ahead in a hard sand at 3,960 feet. The same company's Playa del Rey wildcat has just passed the 4,000-foot level and, since there have been no favorable showings logged to date, the outlook is rather doubtful. Judging by reports coming in from the field, some new wildcat work is expected in the district northeast of the Rideout Heights section of the old Whittier Field. Lease hounds report considerable activity in this section and the exact status of affairs should be known within the next few days. The Barnsdall has been very active of late and company officials have intimated that two wildcats will be drilled in the near future. The A. P. & K. Syndicate is refinancing and will, it is reported, resume drilling shortly on its San Juan Capistrano wildcat, which was carried down and suspended at 2,560 feet. The San Pedro Point Fermin Oil Co. is attempting to pull the 6½-inch out of its 3,723-foot hole at San Pedro, preliminary to resuming operations. Stockholders of the company recently approved the suggestion of the officers to continue drilling and the crew will begin making new hole shortly.

Northern California Wildcats

The Union has just passed a depth of 1,670 feet in its No. 1 Miller and Lux, northwest of the old Belridge Field in Section 16-28-20, and it is thought that the necessary markers should be picked up in this structure hole within a short time. No. 1 Lazard of the Marland in Section 27-26-20, three miles west of the Lost Hills Field, is down 1,320 feet, the present formation being a sticky shale. The Milham's Buttonwillow test is reported at 1,769 feet in a hard sandy formation with no upper showings to date. The Standard is hung up with a 600-foot fish in its Kettleman Hills wildcat at 5,541 feet, and the outlook for a complete recovery is not any too bright. The Shell's No. 1 Vedder, in the Mount Poso Creek area, is drilling ahead in a hard shale at 887 feet. The Associated's test well in the Huron district is going ahead in a clay and sand at 1,483 feet but, since nothing is expected above the 3,000-foot level, it is really just getting under way. The Bolsa Chica temporarily suspended work on its wildcat in the Kettleman Hills in order to ascertain whether any further oil will come into the hole. This well showed a barrel or two of oil at 1,798 feet and the company intends to make a thorough test before resuming drilling.



This is not an airplane view of the Ventura Field but was taken from the road part way up the hill on the Associated's Lloyd lease, between wells No. 10 and No. 12 and looking westward. On top of the hill in the foreground is the Shell's No. 18, twin to No. 6. The gray steel derricks on the new wells are hard to distinguish in the photograph. On the hillside directly across the valley and in line with the two Shell derricks is Taylor No. 10, farthest west producer.

FRENCH DISAPPOINTED IN NEW "OIL" FIELD

Hopes for the oil field discovered at Mirabel, near Clermont Ferrand, France, were shattered by an exhaustive report of Chief Engineer Daval of the Government Mines Department.

Soundings were made and an analysis of mineral substances produced from the wells showed bituminous substances instead of oil. Six thousand kilograms were extracted in the first 24 hours after the well was sunk and then 200 daily.

The first reports reaching Paris said that heavy oils were discovered. M. Daval's statement shows this to have been a mistake. The unusually liquid form in which bitumen spouted from the well gave rise to this error, but contact with the air soon hardened the substance to its normal condition.

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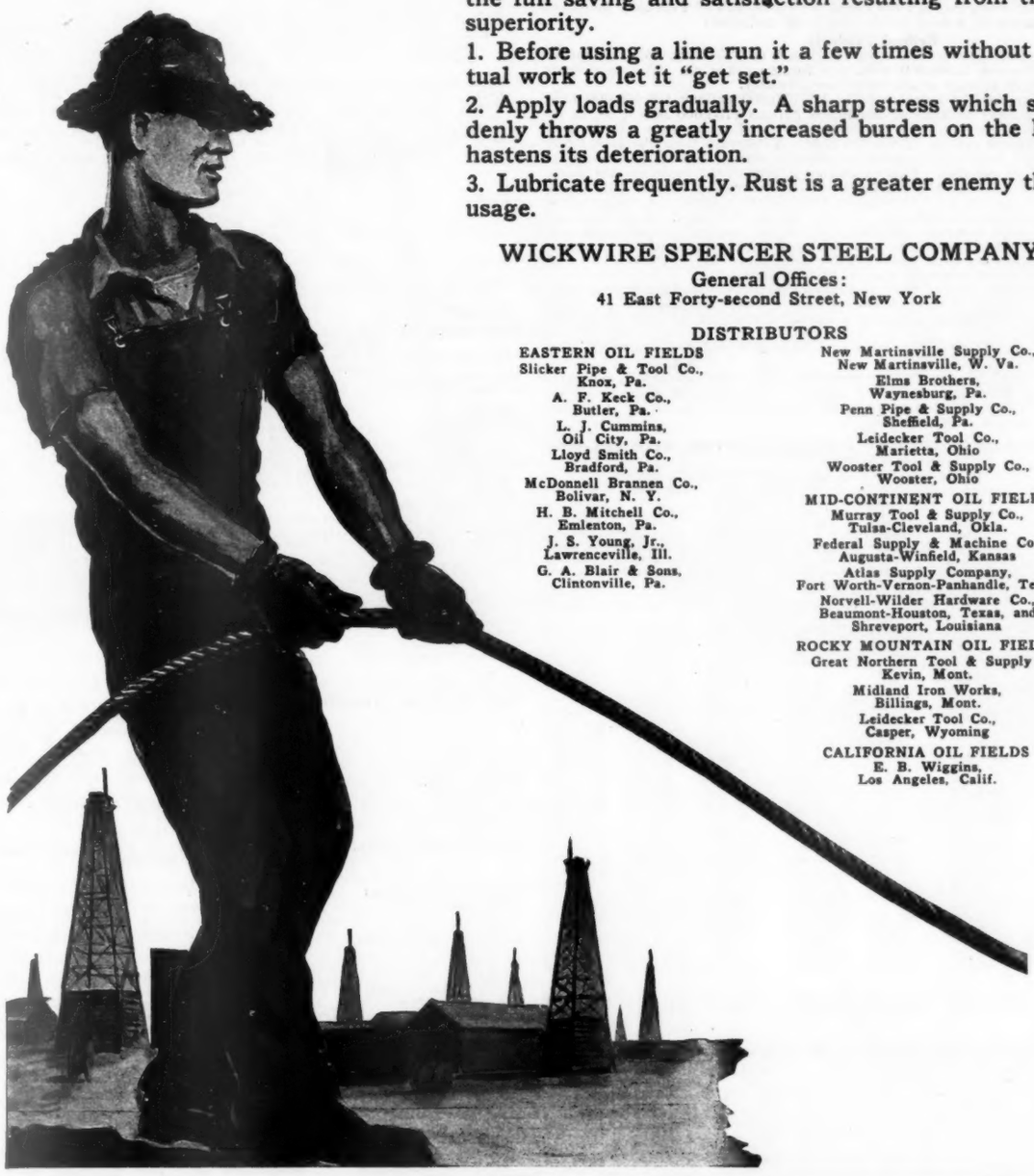

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Petroleum Statistics for the Month of February 1926

By G. H. Hopkins
Petroleum Economist, U. S. Bureau of Mines

The production of crude petroleum in the United States for February, 1926, as compiled from pipe line reports to the Bureau of Mines, Department of Commerce, amounted to 54,564,000 bbls., a daily average of 1,949,000 bbls. per day. This represents an increase over January production of 24,000 bbls. per day, or 1.2 per cent, practically all of which was in light oil. All of the large producing areas of the country recorded increases in daily output during January, with the exception of California. Kansas and the eastern states checked their falling output, but the decline in the Smackover Field, which began in May, was continued during February. Production in Colorado reached a record figure and that of the salt dome fields of Texas continued to rise as the influence of recent discoveries became more marked.

Total stocks of crude petroleum east of California amounted to 287,542,000 bbls., a decrease during the month of about 4,000,000 bbls., of which 350,000 bbls. was in refinery stocks. Stocks of crude oil in the Oklahoma-Kansas-North Texas area fell off 3,000,000 bbls. during February. Stocks of refinable crude in California were increased 700,000 bbls. Stocks of heavy crude and fuel oil in California amounted to 86,268,000 bbls. as compared with the revised total for January of 86,979,000 bbls. Shipments of crude petroleum through the canal for the month of February increased 80 per cent but shipments of refined products fell off materially.

Refined Products

Runs to stills of crude petroleum during the month of February, 1926, amounted to 56,291,000 bbls., of which 3,168,000 bbls. was foreign crude oil. This represents a slight increase in daily average crude runs over January.

Gasoline production for the month totaled 863,525,000 gallons (20,560,000 bbls. of 42 U. S. gallons), a daily average of 30,840,000 gallons (734,000 bbls.), or an increase of 230,000 gallons per day, or 1 per cent, over the January rate. Exports of gasoline totaled 120,304,000 gallons (2,864,000 bbls.), a decrease from the high figure of the previous month. Domestic demand for gasoline during February was at the rate of 23,240,000 gallons per day. This represents a very slight increase over January, but is important as it apparently marks the end of decreasing consumption begun last August. However, stocks were increased 110,000,000 gallons and amounted to 1,858,659,000 gallons (44,254,000 bbls.) on the last day of February. Assuming that imports, exports, and daily domestic demand will remain constant, these stocks represent 75 days' supply, which compares with 70 days' supply on hand the previous month and 79 days' supply on hand February 28, 1925.

Production and stocks of kerosene showed little change.

The daily average production of gas and fuel oils increased, yet stocks were again drawn on extensively. Stocks of this commodity east of California amounted to 900,670,000 gallons (21,445,000 bbls.), a decrease during the month of over 75,000,000 gallons.

The production both of lubricants and wax held steady and stocks of both were again increased.

The refinery figures of this report were compiled from schedules of 318 refineries which operated during February at 79 per cent of their recorded daily crude oil capacity of 2,557,000 bbls. This compares with 317 refineries, operating at 77 per cent of their capacity during January, 1926.

PRODUCTION OF CRUDE PETROLEUM BY FIELDS AND STATES WITH CLASSIFICATION BY GRAVITY

(Barrels of 42 U. S. gallons.)

Field—	January, 1926* Total	January, 1926* Daily Av.	February, 1926 Total	February, 1926 Daily Av.	Jan.-Feb., 1926	Jan.-Feb., 1925
Appalachian	2,168,000	69,935	2,118,000	75,643	4,286,000	4,265,000
Lima-Indiana	157,000	5,064	158,000	5,643	315,000	331,000
Illinois-S. W. Ind.	689,000	22,226	655,000	23,393	1,344,000	1,374,000
Mid-Continent	31,799,000	1,025,789	28,980,000	1,034,286	60,759,000	62,979,000
Gulf Coast	2,734,000	88,193	2,592,000	92,572	5,326,000	3,870,000
Rocky Mountain	3,053,000	98,484	2,917,000	104,178	5,970,000	5,132,000
California	19,070,000	615,147	17,164,000	612,999	36,234,000	35,613,000
Total U. S.	59,670,000	1,924,838	54,564,000	1,948,714	114,234,000	113,564,000
State—						
Arkansas	5,435,000	175,322	4,825,000	172,321	10,260,000	5,776,000
California	19,070,000	615,147	17,164,000	612,999	36,234,000	35,613,000
Colorado	175,000	5,645	189,000	6,750	364,000	111,000
Illinois	636,000	20,516	600,000	21,429	1,236,000	1,265,000
Indiana	63,000	2,032	66,000	2,357	129,000	139,000
Southwestern	53,000	1,710	55,000	1,964	108,000	109,000
Northeastern	10,000	322	11,000	393	21,000	30,000
Kansas	3,295,000	103,388	2,929,000	104,607	6,134,000	4,964,000
Kentucky	500,000	16,129	485,800	17,350	985,800	1,122,100
Louisiana	1,659,000	53,516	1,517,000	54,179	3,176,000	3,156,000
Gulf Coast	311,000	10,032	290,000	10,357	601,000	402,000
Rest of State	1,348,000	43,848	1,227,000	43,822	2,575,000	2,754,000
Montana	374,000	12,065	464,000	16,571	838,000	462,000
New Mexico	131,000	4,226	113,000	4,036	244,000	24,000
New York	147,000	4,742	143,000	5,107	234,000	234,000
Ohio	560,000	18,064	555,000	19,821	1,115,000	1,096,000
Central and East	413,000	13,322	408,000	14,571	821,000	795,000
Northwestern	147,000	4,742	147,000	5,250	294,000	301,000
Oklahoma	13,833,000	446,240	12,791,000	456,822	26,624,000	28,897,000
Osage County	2,019,000	65,129	1,893,000	67,607	3,912,000	4,769,000
Rest of State	11,814,000	381,111	10,898,000	389,215	22,712,000	24,128,000
Pennsylvania	654,000	21,097	634,000	22,643	1,288,000	1,190,000
Tennessee	3,000	97	4,200	150	7,200	900
Texas	10,401,000	335,516	9,490,000	338,929	19,891,000	24,066,000
Gulf Coast	2,423,000	78,161	2,302,000	82,215	4,725,000	3,468,000
Rest of State	7,978,000	257,355	7,188,000	256,714	15,166,000	20,598,000
West Virginia	451,000	14,548	443,000	15,822	894,000	923,000
Wyoming	2,373,000	76,548	2,151,000	76,821	4,524,000	4,536,000
Salt Creek	1,760,000	56,774	1,596,000	57,000	3,356,000	3,447,000
Rest of State	613,000	19,774	555,000	19,821	1,168,000	1,088,000
Classification by gravity (approx.):						
Light crude	43,125,000	1,391,129	39,560,000	1,412,857	82,685,000	88,528,000
Heavy crude	16,545,000	533,709	15,004,000	535,857	31,549,000	25,036,000

*Revised.

STOCKS OF CRUDE PETROLEUM HELD IN THE UNITED STATES (BARRELS)

AT REFINERIES: Reported by location of storage:		Jan. 31, 1926	Feb. 28, 1926	Feb. 28, 1925
East Coast:				
Domestic		*8,003,000	6,397,000	7,734,000
Foreign		2,754,000	2,384,000	2,446,000
Appalachian		1,546,000	1,579,000	1,218,000
Indiana, Illinois, etc.		1,492,000	1,482,000	1,800,000
Oklahoma, Kansas, etc.		3,594,000	3,607,000	5,955,000
Texas:				
Inland		1,155,000	1,114,000	1,228,000
Gulf Coast:				
Domestic		*5,533,000	6,176,000	4,683,000
Foreign		286,000	144,000	655,000
Arkansas and Inland Louisiana		470,000	546,000	343,000
Louisiana, Gulf Coast:				
Domestic		*2,883,000	3,953,000	4,128,000
Foreign		1,556,000	1,531,000	1,865,000
Rocky Mountain		1,509,000	1,521,000	886,000
Total east of California		*30,781,000	30,434,000	32,946,000
ELSEWHERE THAN AT REFINERIES:				
Domestic—by field of origin:				
Appalachian:				
New York, Pennsylvania, West Virginia, Eastern and Central Ohio:	Gross	7,011,000	7,055,000	7,352,000
	Net	6,712,000	6,755,000	7,111,000
Kentucky:	Gross	1,926,000	1,897,000	2,449,000
	Net	1,820,000	1,790,000	2,333,000
Lima-Indiana:	Gross	1,139,000	1,107,000	1,407,000
	Net	937,000	905,000	1,190,000
Illinois-Southwest Indiana:	Gross	11,083,000	11,480,000	11,341,000
	Net	10,607,000	11,001,000	10,813,000
Mid-Continent:				
Oklahoma; Kansas; Central, North and West Texas:	Gross	161,291,000	158,457,000	184,772,000
	Net	149,156,000	146,152,000	173,510,000
Northern Louisiana and Arkansas:	Gross	45,744,000	45,562,000	35,230,000
	Net	43,411,000	43,139,000	33,147,000
Gulf Coast:	Gross	18,805,000	17,905,000	19,310,000
	Net	18,441,000	17,506,000	18,949,000
Rocky Mountain:	Gross	29,141,000	29,456,000	28,961,000
	Net	29,097,000	29,414,000	28,939,000
Total pipe line and tank farm stocks east of California:	Gross	276,140,000	272,919,000	290,822,000
	Net	260,181,000	256,662,000	276,992,000
Foreign crude petroleum on Atlantic Coast		97,000	98,000	204,000
Foreign crude petroleum on Gulf Coast		341,000	348,000	320,000
Total		438,000	446,000	524,000
Total refinery, pipe line and tank farm stocks of domestic and foreign crude petroleum east of California		291,400,000	287,542,000	309,462,000
CLASSIFICATION BY GRAVITY (approx.):				
East of California—not at refineries:				
Light crude (24 degrees and above)		212,840,000	209,183,000	.....
Heavy crude (below 24 degrees):				
Domestic		47,341,000	47,479,000	.....
Foreign		438,000	446,000	524,000
CALIFORNIA (stocks as defined in July report):				
Light		44,215,000	44,877,000	42,706,000
Heavy (including fuel)		86,979,000	86,268,000	57,777,000

*Revised to include crude petroleum in transit not previously included, which approximated 3,200,000 bbls. January 31 and 1,900,000 bbls. February 28.

IMPORTS AND EXPORTS OF CRUDE PETROLEUM (BARRELS)

(From Bureau of Foreign & Domestic Commerce)

	January, 1926 Total	January, 1926 Daily Av.	February, 1926 Total	February, 1926 Daily Av.	Jan.-Feb., 1926	Jan.-Feb., 1925
Imports:	4,688,000	151,226	3,689,000	131,750	8,377,000	12,605,000
From Mexico	3,496,000	112,774	2,829,000	101,036	6,325,000	11,413,000
From other countries	1,192,000	38,452	860,000	30,714	2,052,000	1,192,000
Exports:	1,133,000	38,161	1,049,000	37,464	2,232,000	2,271,000
Domestic crude oil:						
To Canada	1,058,000	34,129	780,000	27,857	1,838,000	1,200,000
To other countries	125,000	4,032	269,000	9,607	394,000	1,046,000
Foreign crude oil	.....	.....	.....	.....	.....	25,000

INDICATED DELIVERIES OF CRUDE PETROLEUM, EXCLUSIVE OF CALIFORNIA GRADES TO DOMESTIC CONSUMERS (BARRELS)

(Production plus imports minus exports plus stocks, exclusive of consumers' stocks, at beginning of month minus stocks at end of month.)

Domestic petroleum by fields of origin:

Field—	January, 1926* Total	January, 1926* Daily Av.	February, 1926 Total	February, 1926 Daily Av.	Jan.-Feb., 1926	Jan.-Feb., 1925
Appalachian	2,128,000	68,645	2,105,000	75,179	4,233,000	4,167,000
Lima-Indiana	191,000	6,161	190,000	6,786	381,000	362,500
Illinois and S. W. Ind.	664,000	21,419	261,000	9,321	925,000	1,431,000
Mid-Continent	35,668,000	1,150,581	32,236,000	1,151,286	67,904,000	66,880,000
Gulf Coast	3,556,000	114,710	3,527,000	125,964	7,083,000	5,121,000
Rocky Mountain	2,936,000	94,710	2,600,000	92,857	5,536,000	4,865,000
Deliveries and exexports	45,143,000	1,456,226	40,919,000	1,461,393	86,062,000	82,766,000
Deliveries	44,185,000	1,425,323	40,138,000	1,433,500	84,323,000	81,079,000
Foreign petroleum	4,657,000	150,225	3,681,000	131,464	8,338,000	12,790,000
Deliveries of domestic and foreign petroleum	48,842,000	1,575,548	43,819,000	1,564,964	92,661,000	93,869,000

*Revised.

NUMBER OF PRODUCING OIL WELLS COMPLETED*

January, 1926	1,164
February, 1926	1,130
January-February, 1926	2,294
January-February, 1925	1,873

*For states east of California, from The Oil and Gas Journal; for California, from the American Petroleum Institute.

SHIPMENTS OF CALIFORNIA OIL THROUGH PANAMA CANAL TO EASTERN PORTS IN UNITED STATES

(From Panama Canal Record)

	Jan., 1926	Feb., 1926	Jan.-Feb., 1926	Jan.-Feb., 1925
Crude oils: Long tons (2,240 lbs.)	116,000	211,000	327,000	413,000
Barrels (approx.)	845,000	1,537,000	2,382,000	3,018,000
Refined products: Barrels (approx.):				
Gasoline	897,000	333,000	1,230,000	591,000
Gas and fuel oils	553,000	432,000	985,000	83,000
Lubricants	71,000	69,000	140,000	69,000
Tops	162,000	.....	162,000	443,000

COMPARATIVE ANALYSES OF MAJOR REFINED PRODUCTS FEBRUARY, 1926, AND PRECEDING MONTHS

	Production	*Imports	*Exports	Stocks End of Period	Domestic Demand
GASOLINE—(Gallons):					
December, 1925	934,549,000	13,448,000	129,850,000	1,648,328,000	759,699,000
January, 1926	948,904,000	16,118,000	143,969,000	1,749,023,000	720,358,000
February, 1926	863,525,000	17,133,000	120,304,000	1,858,659,000	650,718,000
MOTOR FUEL—(Gallons):					
December, 1925	970,400,000				
January, 1926	988,600,000				
February, 1926	903,000,000				
KEROSENE—(Gallons):					
December, 1925	223,780,000	53,000	76,974,000	299,190,000	162,223,000
January, 1926	214,761,000	15,000	78,793,000	287,618,000	147,555,000
February, 1926	197,992,000	34,000	66,253,000	287,994,000	131,397,000
LUBRICANTS—(Gallons):					
December, 1925	113,857,000	36,000	39,770,000	305,203,000	62,832,000
January, 1926	111,255,000	90,000	30,541,000	316,839,000	69,168,000
February, 1926	101,892,000	56,000	33,128,000	332,176,000	53,484,000
WAX—(Pounds):					
December, 1925	52,859,000	807,000	32,356,000	116,391,000	16,150,000
January, 1926	53,630,000	631,000	29,051,000	122,773,000	17,828,000
February, 1926	49,933,000	668,000	28,709,000	123,964,000	20,690,000
GAS AND FUEL OILS—(Gallons):					
December, 1925	1,298,045,000	17,530,000	149,798,000	†1,036,619,000	.....
January, 1926	1,231,400,000	36,242,000	151,696,000	†977,178,000	.....
February, 1926	1,186,823,000	66,573,000	133,997,000	†900,670,000	.....
February, 1925, for comparison:					
Gasoline, (gallons)	800,442,000	12,033,000	103,141,000	1,618,891,000	543,640,000
Kerosene (gallons)	214,421,000	74,000	55,344,000	435,376,000	118,413,000
Lubricants (gallons)	100,503,000	32,000	26,950,000	286,431,000	67,543,000
Wax (pounds)	47,812,000	1,349,000	25,601,000	89,326,000	23,240,000
Gas and Fuel Oils (gallons)	1,058,725,000	59,555,000	109,458,000	795,872,000	.....

*From Bureau of Foreign and Domestic Commerce. Exports, except for wax, include shipments to Alaska, Hawaii and Porto Rico.
†These stocks for east of California only.

RUNS TO STILLS AND OUTPUT OF REFINERIES IN THE UNITED STATES FOR FEBRUARY, 1926

Oils Run to Stills (Bbls.):	Crude Oils Domestic	Crude Oils Foreign	Unfinished Oils	Natural Gas Gasoline	Total Oils Run to Stills
East Coast	6,963,000	1,805,000	991,000	322,000	10,081,000
Appalachian	2,070,000	.....	103,000	23,000	2,196,000
Indiana, Illinois, etc.	5,183,000	.....	140,000	80,000	5,403,000
Oklahoma, Kansas, etc.	6,833,000	.....	133,000	176,000	7,123,000
Texas	10,674,000	459,000	667,000	371,000	12,171,000

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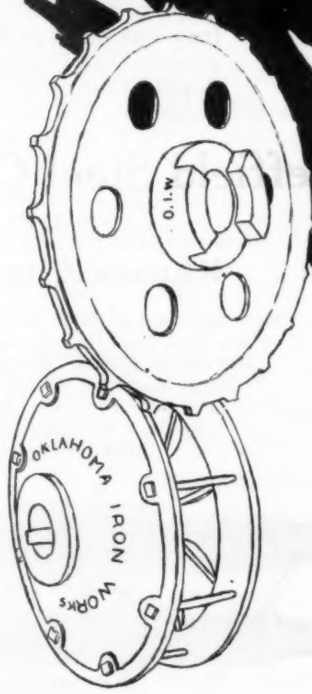

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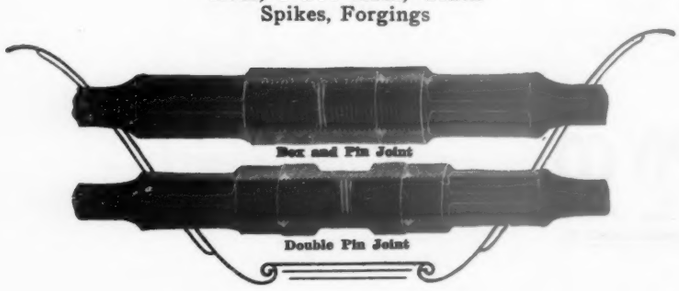


Louisiana and Arkansas	4,460,000	904,000	194,000	52,000	5,610,000
Rocky Mountain	2,123,000	.....	516,000	56,000	2,695,000
California	14,767,000	.....	327,000	301,000	15,395,000
U. S. Total	53,123,000	3,168,000	3,071,000	1,381,000	60,743,000
Daily average, Feb., 1926	1,897,300	113,100	109,700	49,300	2,169,400
Daily average, Jan., 1926	1,888,900	87,100	95,700	49,200	2,120,900
Texas Gulf Coast	8,133,000	459,000	627,000	331,000	9,590,000
Louisiana, Gulf Coast	3,047,000	904,000	174,000	1,000	4,126,000

Output and Losses:	Gasoline (Gallons	Kerosene (Gallons)	Gas and Fuel Oils(Gallons)	Lubricants (Gallons)	Wax (Pounds)
East Coast	128,532,000	42,118,000	185,956,000	29,725,000	18,633,000
Appalachian	37,507,000	13,877,000	18,185,000	15,346,000	3,125,000
Indiana, Illinois, etc.	116,437,000	15,485,000	59,011,000	11,052,000	5,663,000
Oklahoma, Kansas, etc.	145,914,000	25,232,000	102,453,000	8,092,000	3,258,000
Texas	186,461,000	54,072,000	200,359,000	25,128,000	4,333,000
Louisiana and Arkansas	58,697,000	21,704,000	105,441,000	2,845,000	5,844,000
Rocky Mountain	48,548,000	4,863,000	26,842,000	2,142,000	3,626,000
California	141,429,000	21,641,000	438,676,000	7,563,000	.....
U. S. Total	863,525,000	197,992,000	1,136,823,000	101,893,000	49,922,000
Daily average, Feb., 1926	30,840,000	7,071,000	40,601,000	3,639,000	1,783,000
Daily average Jan., 1926	30,610,000	6,928,000	30,723,000	3,589,000	1,698,000
Texas Gulf Coast	145,193,000	45,737,000	153,917,000	24,456,000	4,654,000
Louisiana, Gulf Coast	46,386,000	19,863,000	63,804,000	2,845,000	5,844,000

Output and Losses:	Coke (Tons)	Asphalt (Tons)	Other Finished Prod. (Gallons)	Unfinished Products (Gallons)	Losses (Barrels)
East Coast	15,655	52,967	3,143,000	299,000	382,000
Appalachian	1,470	.....	1,309,000	993,000	110,000
Indiana, Illinois, etc.	15,959	16,931	4,280,000	3,837,000	188,000
Oklahoma, Kansas, etc.	6,193	712	1,371,000	5,244,000	268,000
Texas	7,852	21,214	419,000	15,589,000	527,000
Louisiana and Arkansas	10,869	30,874	5,297,000	26,958,000	99,000
Rocky Mountain	6,107	2,112	23,000	27,028,000	24,000
California	.....	27,668	5,478,000	*18,253,000	169,000
U. S. Total	64,105	152,468	20,220,000	98,301,000	1,767,000
Daily average, Feb., 1926	2,289	5,445	722,000	3,511,000	63,100
Daily average Jan., 1926	2,377	5,238	666,000	2,842,000	64,000
Texas Gulf Coast	6,176	21,214	77,000	6,897,000	428,000
Louisiana, Gulf Coast	10,339	29,219	5,097,000	22,870,000	58,000

*Includes 13,800 bbls. net tops produced.

GASOLINE PRODUCTION BY THE VARIOUS METHODS—FEBRUARY, 1926

(Gallons)

	Straight Run	%	Cracked	%	Nat. Gas Gasoline	%	Total
East Coast	66,723,000	52	48,275,000	37	13,524,000	11	128,532,000
Appalachian	26,078,000	69	10,463,000	28	966,000	3	37,507,000
Indiana and Illinois	66,659,000	57	46,418,000	40	3,360,000	3	116,437,000
Oklahoma and Kansas	100,028,000	69	38,494,000	26	7,392,000	5	145,914,000
Texas	101,180,000	54	69,699,000	38	15,582,000	8	186,461,000
Louisiana and Arkansas	39,158,000	67	17,355,000	29	2,184,000	4	58,697,000
Rocky Mountain	24,832,000	51	21,364,000	44	2,352,000	5	48,548,000
California	128,383,000	91	404,000	..	12,642,000	9	141,429,000
U. S. Total	553,051,000	64	252,472,000	29	58,002,000	7	863,525,000
U. S. Total, Jan., 1926	610,540,000	64	274,314,000	29	64,050,000	7	948,904,000
*Texas-Louisiana, Gulf Coasts	106,783,000	53	76,852,000	40	13,994,000	7	191,579,000

*Included above under Texas, Louisiana and Arkansas.

STOCKS HELD BY THE REFINING COMPANIES IN THE UNITED STATES FEBRUARY, 1926 (Gallons)

	Gasoline (Gallons)	Kerosene (Gallons)	Gas and Fuel Oils(Gallons)	Lubricants (Gallons)
East Coast	410,489,000	58,162,000	204,653,000	126,656,000
Appalachian	42,888,000	9,616,000	25,171,000	37,420,000
Indiana and Illinois	239,661,000	25,928,000	33,149,000	24,717,000
Oklahoma and Kansas	166,777,000	15,304,000	145,875,000	20,371,000
Texas	232,125,000	60,396,000	300,188,000	63,553,000
Louisiana and Arkansas	152,115,000	14,284,000	134,224,000	5,005,000
Rocky Mountain	185,735,000	14,582,000	57,410,000	8,237,000
California	427,869,000	79,622,000	.....	36,217,000
U. S. Total	1,858,659,000	287,994,000	900,670,000	332,176,000
U. S. Total, January 31, 1926	1,749,023,000	287,618,000	977,178,000	316,839,000
Texas Gulf Coast	207,651,000	51,728,000	257,679,000	62,065,000
Louisiana, Gulf Coast	147,030,000	13,894,000	96,680,000	5,005,000

	Wax (Pounds)	Coke (Tons)	Asphalt (Tons)	Other Finished Products (Gallons)	Unfinished Oils (Barrels)
East Coast	52,456,000	14,760	85,215	5,133,000	7,081,000
Appalachian	15,499,000	632	79	2,220,000	953,000
Indiana, Illinois, etc.	26,127,000	6,409	16,769	21,540,000	3,381,000
Oklahoma, Kansas, etc.	2,991,000	17,996	766	3,016,000	1,920,000
Texas	8,686,000	53,921	13,561	1,032,000	7,120,000
Louisiana and Arkansas	7,141,000	55,194	29,232	2,096,000	2,664,000
Rocky Mountain	10,960,000	58,335	8,371	80,000	1,867,000
California	104,000	.....	29,070	9,960,000	*13,822,000
U. S. Total	123,964,000	210,247	182,063	45,076,000	28,808,000
U. S. Total, January 31, 1926	122,773,000	230,566	174,564	44,672,000	27,380,000
Texas Gulf Coast	8,583,000	49,829	13,561	160,000	6,620,000
Louisiana, Gulf Coast	7,141,000	56,122	28,933	2,047,000	2,365,000

*Includes 6,098,000 bbls. tops in storage.

NATURAL GAS GASOLINE, FEBRUARY, 1926

The daily average production of natural gas gasoline again registered a gain after the slight decline of January. Total output amounted to 100,000,000 gallons, which is at the rate of 3,571,000 gallons per day. This represents an increase over January of .5 per cent and is the highest figure yet recorded. The Rocky Mountain area showed the largest percentage gain during February. Stocks of raw natural gas gasoline at the plants February 28, 1926, amounted to 17,574,000 gallons—an increase during the month of 600,000 gallons. The status of blending at the plants showed little change in February.

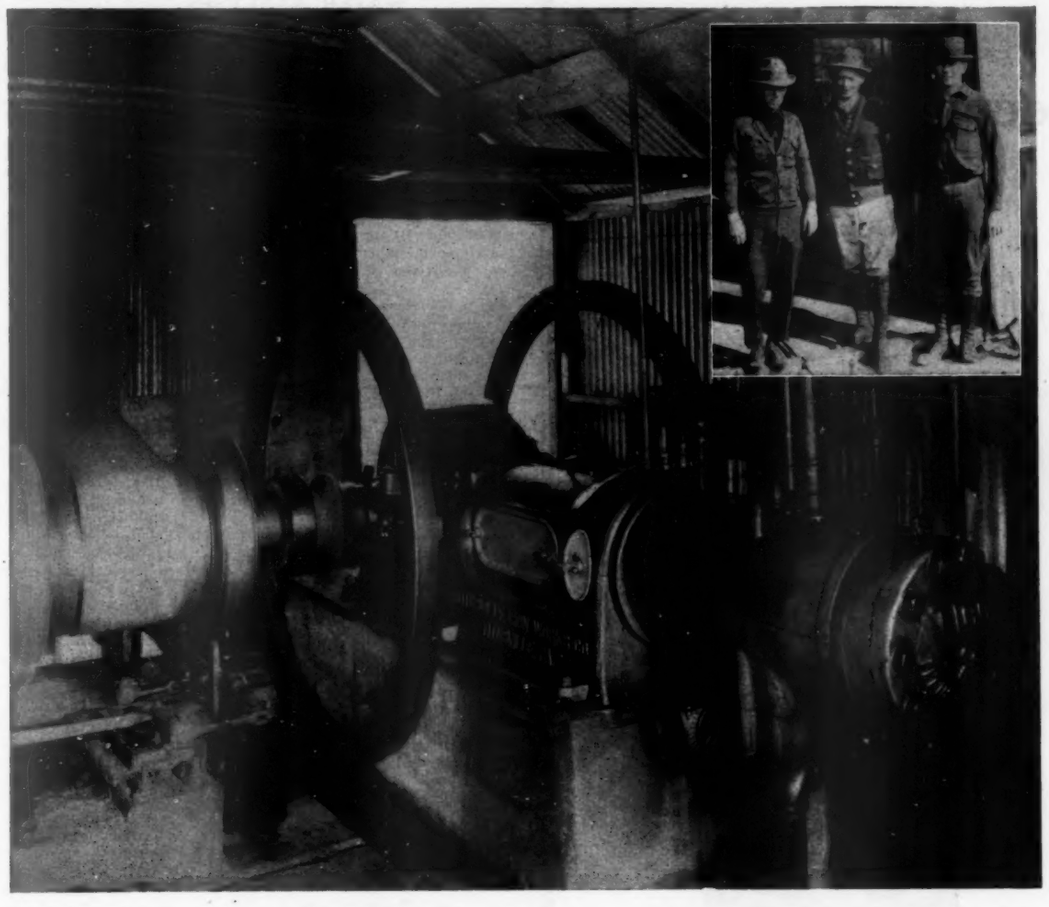
	Natural Gas Gasoline		Blended Motor Fuel—		
(Gallons)	Production †(Net)	Stocks End of Month	Natural Gas Gasoline used in Blends	Naphtha or Other Oils Used in Blends	Stocks End of Month
Appalachian	10,100,000	3,012,000	242,000	424,000	469,000
Indiana, Illinois, etc.	1,700,000	222,000	61,000	12,000	15,000
Oklahoma, Kansas, etc.	36,700,000	9,276,000	2,272,000	4,654,000	2,434,000
Texas	16,300,000	2,749,000	242,000	653,000	462,000
Louisiana and Arkansas	5,500,000	1,005,000	25,000	.....	.....
Rocky Mountain	2,600,000	360,000	59,000	97,000	449,000
Total east of California	72,900,000	16,724,000	3,005,000	5,840,000	3,829,000
California	27,100,000	850,000	*	*	30,000
Total United States	100,000,000	17,574,000	.....	.....	3,859,000
Daily average	3,571,000	.....	.....	.....	.....

†1 per cent estimated.
*Not available.

The indicated output of motor fuel in the United States from the above and other sources may be expressed by the following table:

(Gallons)	Jan., 1926	Feb.,1926
Gasoline produced at refineries	948,900,000	863,500,000
Natural gas gasoline produced at plants	106,000,000	100,000,000
*Benzol production	7,600,000	7,000,000
Less natural gas gasoline blended at refineries	64,100,000	58,000,000
Less natural gas gasoline run through refinery pipe lines	†9,800,000	9,500,000
Total United States	988,600,000	903,000,000
Daily average	31,900,000	32,300,000

†Estimated with production of by-product as basis.
*Revised.



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APPLYING OIL FIELD WATER ANALYSES

(Continued from Page 70)

is not found on the surface nor in wells south of Waco or Kosse. This sand was laid down during the beginning of Upper Cretaceous times in a comparatively rapid encroaching sea from the south and east. A fairly consistent sand body has so far been discovered in the fields proper. Several distinct sand series are known at Mexia, where the most prolific producing sand body was probably not more than 10 feet in thickness. At Powell, some 100 feet of sand has already been discovered in the south end of the field.

The Woodbine sand series of the Woodbine member is a fairly uniform body which extends from the outcrop to the fields and beyond to the east for some distance; the lithologic characteristics of the sand will allow the migration of waters unless interrupted by faulting or shale beds. The former may be considered as a serious factor to interrupt the migration of these waters.

At the outcrop, meteoric waters are entering the Woodbine sand and are migrating down dip through the action of gravity and capillary attraction to a certain critical level where they cease to be fresh.

The waters occurring in the Woodbine sand in east Texas belong to the following types, altered connate, altered meteoric and mixed. The altered connate in general can be considered as lying east of the producing faulted zone and it is the water that occurred in the sand at the time it was deposited and which has been altered by the action of organic matter and zeolites. In addition to the above altered connate, there is an altered brine occurring close to the fault, which its position would indicate was not indigenous to the Woodbine, but had come up the fault plane. In general, the modified meteoric water occurs west of the producing faulted area and is the meteoric water which enters at the outcrop of the Woodbine and has been altered by the organic matter occurring in the shale members and the zeolites in the sand. The mixed type consists of admixture of the above waters, the degree of admixture depending upon the thoroughness of the fault seal.

Migration and Accumulation

The general conditions for accumulation of oil and water in the Powell and Mexia Fields appears to be the presence of a sand body on the upthrow side of a fault at such a depth that the action of the downward migrating meteoric waters and upward migrating connate waters are arrested in what may be called a neutral zone. Munn has discussed this point in his article entitled, "The Anticlinal and Hydrostatic Theories of Oil and Gas Accumulations", Econ. Geol., Vol. 11, pages 509 to 529. If a fault and sand body are found up dip from this neutral zone, the effect of the downward migrating meteoric waters could flush out the oil unless a tremendous uplift or fault would bring about conditions which would permit an accumulation of oil. Again, a fault and sand body down dip from this neutral zone would come under the influence of the hydrostatic head of connate waters from the east and likely would flush out the oil unless some exceptional condition of folding and faulting existed. This may account for the general absence of oil in the cores from the Woodbine series immediately east of the field.

Any fault may allow the upward migration along the fault plane of deep seated waters which in turn will penetrate into the sand or porous horizons on either side of a fault plane into the zones which afford the least resistance. In fact, the writers first conceived the idea of these sources of deep seated water from data collected from the No. 1 Jones well at Kosse. Cuttings were analyzed daily and the drilling stopped in the Georgetown series where production was apparently found. Some water was present with the oil originally. Shortly afterwards, without any apparent reason, the well stopped flowing very suddenly and some weeks later upon agitation started flowing great volumes of water with oil. This second flow of water was found to be more gasoline than the original water found with the oil. A study of this well revealed the following facts: That the original hole was drilled into the Georgetown limestone, that the sudden stopping of the flow of oil was produced during a natural bridging below the bottom of the drill hole in the cavern or fissures through which oil and water was migrating from below with tremendous pressure, dislodging fragments of lime which were carried to the surface and upon analysis were found to be Glenrose in age, which lime series is found several hundred feet below the Georgetown lime in which the hole was terminated. This proved conclusively that the source of oil at Kosse was deep seated.

Characteristics of Mixed Waters

From theoretical considerations (Rogers) an altered sea water would have the following composition: Primary salinity 85.4 per cent, secondary salinity 12.8 per cent, secondary alkalinity 1.8 per cent, total solids 32,200 parts per million. According to the classification adopted by Rogers, the water from No. 1 Mackey, from the Mexia Field, which is typical, is an altered brine. This does not mean, however, that there has been no admixture of modified meteoric water, but is simply a means to classify waters. In the case of No. 1 Mackey, there has been a slight admixture of modified meteoric water as indicated by the increased primary salinity and decreased secondary salinity and decreased solids as compared with the typical altered sea water given above. This brings up the question of the effect of the admixture of an altered sea water with modified or altered meteoric water.

When an altered sea water and a modified water mix, reactions occur between the dissolved constituents of the water which decrease the secondary salinity and increase the primary salinity. This action can be expressed by the following equation:

$$Ca\ Cl_2 + Ma_2CO_s = 2\ Na\ Cl + Ca\ Co_s$$

Secondary Primary Primary Secondary
Salinity Alkalinity Salinity Alkalinity

resulting in the deposition of calcium carbonate.

Analyses of waters at Currie, Richland and Powell indicate that waters close to the fault are less mixed with meteoric water than waters further away on either side of the fault. East of the fault and east of the zone of maximum admixture, the water again becomes more of an altered brine type. The occurrence of a larger admixture of meteoric water east of the fault than occurs at the fault proper indicates that at some time brine had entered the Woodbine via the fault plane.

That the water relations given are not peculiar to the Woodbine formation but exist elsewhere, is indicated by analysis of the water from the gas well, No. 1 Ruth, Grimes County, Texas, which shows that admixture of modified or altered meteoric water, with the altered connate water, has occurred to such an extent that secondary salinity has been eliminated and primary alkalinity has taken its place. The per cent of sulphate salinity is also low.

It is not necessary to have altered meteoric water present in order to use water analyses to locate faults. For example, if aconnate water from one strata should pass along a fault plane and mix with the connate water of another strata, analyses of the two waters and the mixture would clearly indicate what has occurred. If analyses indicated that two waters from different horizons had mixed, we would feel safe in assuming a fault connecting the horizons. This method of locating faults will probably be of considerable value in west Texas as soon as the file of water analyses becomes great enough. In comparing waters in this manner, it is very convenient to use simple equations. By this method not only can the fact that a water is a mixture of two other waters be determined,

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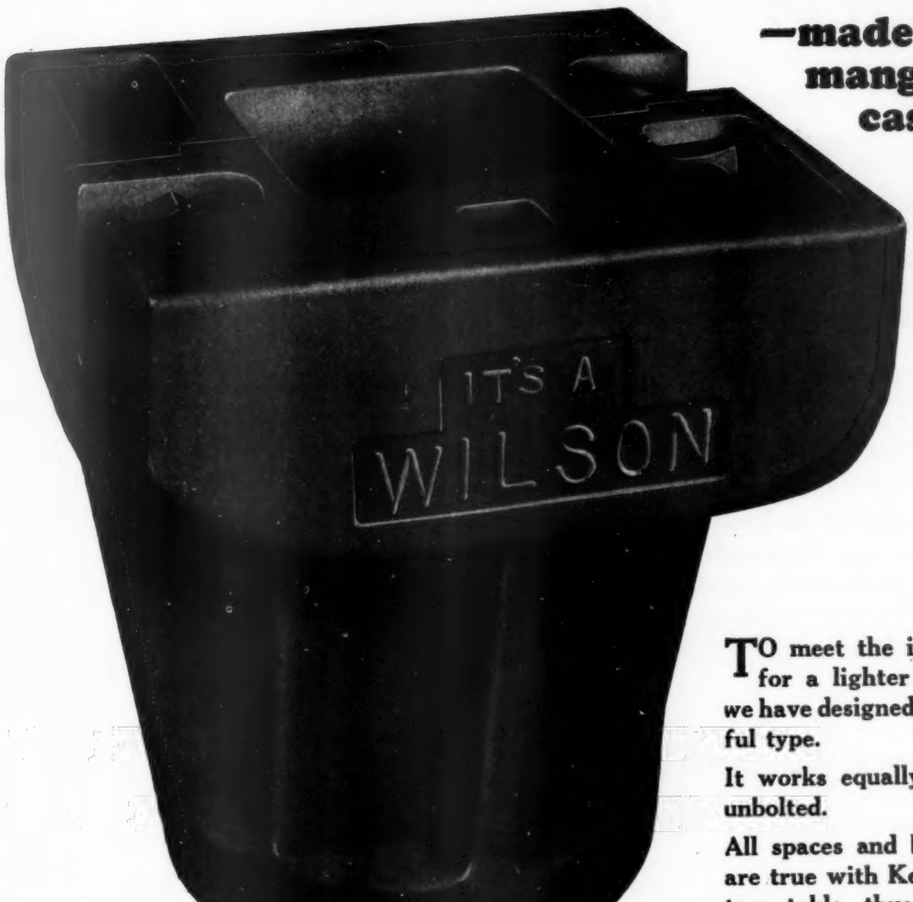

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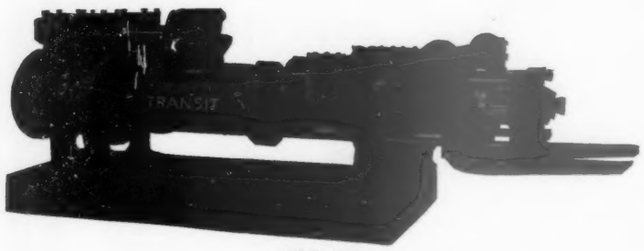

FIG. 540

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but the relative amount of each present in the mixture is shown.

Method Used

This method was first used to determine the source of water flooding a field. In the Breckenridge district, Stephens County, Texas, A. O. West tracts showed water. Their No. 1 Dunlap, in an adjoining lease had been making water. Samples of water from the various wells were analyzed and compared in the following manner, which is the method recommended above as a help in locating faults. It will be seen from the analysis that No. 1 Dunlap is the most concentrated water. By comparing the properties of reaction and reacting values it will be noted that No. 1 Dunlap, No. 2 R. W. West and No. 1 C. H. West, are all of the same class, while No. 4 M. E. West is in a class by itself. The proposition is to determine whether the waters from No. 2 R. W. West and No. 1 C. H. West are combinations of water from No. 1 Dunlap and No. 4 M. E. West. For this purpose, the most convenient method is to apply algebra to the total solids.

For example: Let $\times$ equal the amount of No. 1 Dunlap in 100 parts of No. 1 C. H. West. Then 100 minus $\times$=amount of No. 4 M. E. West in 100 parts of No. 1 C. H. West. With this as a basis, we have the following equation:

$147{,}157\times+1{,}248$ (100 monus $\times$)$=12{,}427{,}700$. Solving for $\times$, we find that $\times=84.3\%$. Calculating the composition of a mixture for a combination of 84.3%, No. 1 Dunlap and 15.7% of No. 4 M. E. West, we find the following composition.

	Parts per million
Sodium	35,697.2
Calcium	9,732.6
Magnesium	1,649.9
Chlorine	77,044.6

which is practically identical with the composition of the water from No. 2 R. W. West.

The advantage of having a complete analysis is apparent. It would be possible for one ingredient to check, while it is practically impossible that several ingredients would check on a mixture of waters.

In using this method, the possibility of chemical reactions between the dissolved solids resulting in precipitation of part of the ingredients should be considered.

Comparison of Waters

The waters encountered in the Woodbine sand in the Powell Field are entirely different from the waters encountered in Mexia and Currie Fields in that the Powell Field waters contain a large amount, comparatively speaking, of primary alkalinity, while the waters from Mexia and Currie Fields contain secondary salinity.

The analyses of waters from the Powell Field show that a brine has come up the fault plane and mixed with waters occurring in the Woodbine. The waters occurring in the Woodbine before this admixture of water from up the fault plane, were a mixture of altered connate water and altered meteoric water. Altered meteoric water is characterized by primary alkalinity. Where altered meteoric water and altered brine mix there is a precipitation of calcium and magnesium carbonate. This precipitation of calcium and magnesium carbonates in the Woodbine on both sides of the fault plane would be large in the case of Powell on account of the large amount of primary alkalinity precipitating all the secondary salinity of the brine which was laid down with the Woodbine and that which later came up the fault plane. It is very probable that some oil came up the fault plane along with the brine and the trapping of this oil in the Woodbine sand may have been helped by the action of the precipitated carbonates. The accumulation of oil due to the cementing action of the precipitated calcium and magnesium carbonates when the types of waters mentioned above have intermingled, has probably served as a barrier in the Woodbine sand, particularly at Powell.

Cementing Material

The following analyses of cementing materials found in cores of Woodbine sand are submitted for future reference.

The core from the Panhandle No. 1 Grinnan, contains 5.6 times as much acid soluble. cementing material as the core from the A. O. P. Goldman and 22.5 times as much as Gulf, No. 4 R. V. Bounds. This acid soluble material is a measore of the cementing material in the core.

The question is, is this acid soluble material in the Panhandle No. 1 Grinnan, material that was laid down with the sand or was it subsequently deposited in the sand. The low content of acid soluble silica indicates that the major portion of the acid soluble iron and aluminum exists in the sand as oxides and not as silicates. This, in connection with the high calcium and magnesium content, which probably is in the form of carbonates, would support the theory that these cementing materials were deposited in the sand, after it was in position. From the analyses of these cores, it is apparent that precipitation does act as a cementing material in sand.

Powell Field

There are three different waters in the Woodbine sand in the Powell Field and mixtures of these various waters.

At the time the Woodbine was laid down, it was saturated with sea water. This water became altered connate water. The water entering at the outcrop of the Woodbine as it descended the dip became modified, as represented by the Dallas artesian water, and finally altered. This altered meteoric water penetrated as far east as Kerens as shown by analysis of the Kerens well water which is lower in total solids and secondary salinity than altered sea water. The water in the Woodbine in the area under discussion at the time faulting occurred consisted of a mixture of altered meteoric and altered connate, the proportions of each depending upon the distance from the outcrop and porosity of the sand.

At the time faulting occurred, water came up the fault plane penetrating the sand on both sides of the fault. This fault plane water was evidently a brine containing secondary alkalinity and more solids, carbonates and sulphates than the mixed water occurring in the Woodbine. These facts are shown by the increased solids, sulphates and carbonates and decreased primary alkalinity of the waters occurring close to the fault. This fault plane water penetrated as far east as No. 2 U. S. Ramsey. This fact is shown by the large reduction in solids, sulphates and carbonates of the water from Empire, No. 1 Sweatman, compared with No. 2 U. S. Tex-Ramsey. The increase of primary alkalinity eastward from the fault shows the lessening effect of the fault plane water. The water eastward far down dip contains secondary alkalinity and the decrease in primary alkalinity commencing with Empire, No. 1 Sweatman, shows the increase admixture of this connate water.

Luling Field

The Luling Field presents an interesting problem in the application of water analyses. There are four different waters in this field and mixtures of these various waters.

A modified water came up the west fault and mixed with the water occurring in the Edwards limestone, which latter water is represented by the water from No. 1 Hindeman. The fact is to be noted that this water is high in sulphates and low in carbonates. The water that came up the fault plane was low, comparatively speaking, in solids and sulphates and high in carbonates. These facts are shown by analyses of the resultant mixed waters which are lower in total solids, sulphates, and secondary salinity. The effect of the admixture of fault plane water is shown as far east as Grayburg, No. 4 Merriweather. After water came up the fault plane, additional water of the No. 1 Hindeman, Shinneman type penetrated past the fault. This fact is shown by the higher total solids close to the fault compared with the waters further east. The explanation of the apparent inconsistency of the waters from Magnolia's No. 2 Byrd and Grayburg's No. 5 Merriweather, will be made later on.

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ter originally occurring in the Edwards limestone is represented by the water from Rayor's Walker, which is high in solids and sulphates. An altered meteoric water came up the east fault plane and penetrated westward to a point between Grayburg's No. 2 Merriweather and Grayburg's No. 4 Merriweather. This east fault plane water was low in solids, practically free of sulphates and high in carbonates. These facts are shown by the lower solids, sulphates and secondary of the resultant mixed waters.

Based upon the change in sulphates and total solids between Grayburg's No. 2 Merriweather and Grayburg's No. 4 Merriweather, we assume that the hydrostatic head of water from the west balances the hydrostatic head of water from the east at a point between these two wells. This assists us in interpreting the analyses of waters from Grayburg's No. 5 Merriweather and Magnolia's No. 2 Byrd. All the waters as they come from the wells contain hydrogen sulphide. Magnolia's No. 2 Byrd and Grayburg's No. 5 Merriweather are on the outcrop side of these balanced hydrostatic heads. The water from the outcrop contains dissolved oxygen. This oxygen reacting with the hydrogen sulphide and calcium carbonate forms calcium sulphate. Since these two waters are more dilute than any of the others they will dissolve a greater portion of calcium sulphate, thereby increasing the secondary salinity and decreasing the primary salinity and secondary alkalinity. This would result in caverns in the limestone. In the case of Grayburg's No. 2 Merriweather, the well being on the side away from the outcrop, the water does not get the effect of the dissolved oxygen, and therefore, the sulphates are low. This theory is supported by the various analyses.

We believe that the water that occurred in the Edwards lime previous to the admixture of water up the two fault planes, was of the No. 2 Hindeman, Shinneman type and was a mixture of water of the Rayor-Walker type and meteoric water which came down dip from the outcrop. Due to the diluting action of the meteoric water more sulphates are in solution in the No. 1 Hindeman, Shinneman type of water than in the Rayor's No. 1 Walker type. This increase in sulphates was obtained by the interaction of dissolved oxygen, hydrogen sulphide and limestone given above.

Method of Collecting Samples

Samples of water should be kept in glass bottles, preferably sealed. Not less than a quart of deep seated waters should be preserved in the case of upper waters, preferably a gallon. By sealing the samples as soon as obtained, changes in composition due to escape of carbon dioxide and precipitation of calcium and magnesium carbonates is reduced to a minimum. This condition of changing of composition in the case of deep seated water is usually negligible. We know of only one field under discussion where this is likely to occur and that is in the Luling Field. Under normal conditions, there is practically no change in the composition of a water produced from a given horizon over long periods. However, where a large number of wells penetrate a strata, leaks may cause a change and the direction of flow may be changed so as to alter their composition.

While the minimum amount of water to be taken as a sample has been indicated as a quart, analyses can be made on a lesser quantity when necessary. When the Burke discovery well of the Powell Field started making B. S., a quantity of the emulsion was brought to the laboratory, centrifuged and 40 cc. of water obtained. This was analyzed and found to be practically the same in composition with the water obtained from Humphrey's No. 1 Singleton, indicating that the water from the Burke well was bottom or edge water and not water from above.

When water is to be tested for its hydrogen sulphide content, as on the Gulf Coast and Luling Fields, a known quantity of water should be placed in a glass stoppered bottle containing a known amount of standard iodine solution. The necessity of this procedure is the loss of hydrogen sulphide due to evaporation and oxidation when taken in the usual manner. This test for hydrogen sulphide is not reliable where the water has been in contact with vegetation.

In the problem at hand we have to deal with rotary drilling for the most part where heavy mud laden fluids are pumped under pressure into the well and it is difficult to obtain representative water samples unless the well is bailed from the bottom. However, in many fields, the wells are standardized before the oil sand is penetrated, thereby providing a means of obtaining the water through bailing which sample should be typical of the body of water in the sand.

If a well flowed water and oil after being agitated, it is possible to draw off samples of water from the flow tank. Whenever possible the samples are obtained by bailing after the well has been cleaned and preferably after it has flowed. In a few cases, an analysis was made of the mud laden fluid pumped into the well. Then after several hours of drilling and pumping in the sand, the mud and water from the well was analyzed again. In most cases, this method was not satisfactory.

The most difficult factor in this collecting of samples is time. By time, we mean the time when the sample can be obtained. It is necessary to have several individuals delegated to collect water samples, as in many cases the well is plugged as soon as the sand is found to be carrying water in large quantities. This makes it necessary to have a sampler available at every hour of the day and night on important wells.

In the rotary drilling of sands above the Woodbine, water samples can only be obtained by bailing the hole down sufficiently to clean it of the mud laden fluid. This necessarily is expensive. The practice of obtaining the waters from sands or limes above the Woodbine series is primarily with the thought of having a record of waters above the producing horizon which later may work their way down to the producing sand through leaking casing seats or through holes worn in the casing by bailing, swabbing or pumping. When a sample of the upper waters is obtained, it is an easy matter to determine the source of the water should it appear with the oil later. It is probable that conclusions can be drawn from analysis of upper water encountered in drilling to the Woodbine which will aid in determining the position of the well with relation to the faulting.

Summary and Conclusions

At the outcrop of the Woodbine sand member, meteoric waters are entering and migrating down dip, gradually dissolving more mineral matter with depth, until they come in contact with the old fossil sea water (connate waters) of the series where there is a blending of the two and neither predominates.

The deeper connate upward migrating waters are under a hydrostatic head as are the downward migrating meteoric types.

A neutral zone of migration exists between these two heads of waters within which their diffusion causes the precipitation of calcium and magnesium carbonates.

Should a fault with considerable throw occur in this neutral zone and if crumpling of the beds along the fault plane was carried down to considerable depths, water could easily migrate along the fault plane and enter the Woodbine sand, mingling with the mixed types of waters in contact with the fault plane.

A deep seated source of water and oil is known to exist at Kosse below the stratigraphic position of the Woodbine. This water may be coming from the Glenrose series or below.

At Luling, the water coming up the fault plane may have its source in the Trinity series or lower horizons. It is generally known that the water west of the Luling Field proper, in the Edwards-Georgetown limestone, are less portable than the waters from the underlying Trinity series. Mention of this fact is

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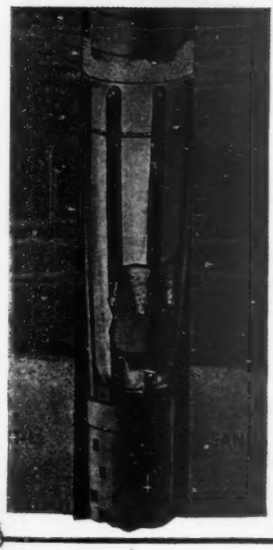

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In the illustration shown here, The Baker Cement Basket saves one string of casing. After the water has been shut off with the first string and another water sand is encountered between that point and the oil-bearing sand or strata, by using the Baker basket one string serves the duty of two, as the basket cements the water formation off, leaving the oil sand free from water.

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In All Fields

made by Doctor Hill in the Eighteenth Annual Report of the U. S. G. S., part 2, page 306.

Analyses of waters at Luling prove that the waters which have migrated up the fault planes are very different from the water on either side of the faults.

A fault of sufficient throw occurring along the Mexia-Powell-Luling fault zone, which would displace porous members, either sand or lime, would arrest further migration of original waters.

Providing the pressure of the water coming up the fault plane counterbalances the pressure of the original water found in the Woodbine sand and Georgetown limestones adjacent to the fault, any oil carried with the water up the fault plane could accumulate in this neutral pressure zone. Analyses of waters show the limits to which the fault plane water penetrated.

Samples of water from drilling wells are comparatively easy to collect and should be used as an index for oil through the assistance they will render in locating fault lines. Analyses of shallow waters from wells can be used to substantiate the location of surface faults.

From the fact that most subsurface producing structures are associated with faulting, it is assumed from a study of the above data submitted that the accumulations of oil along a fault line may be due in part or in whole to migration of oil up the fault plane and out into porous zones of least resistance.

June 24, 1921

Atlantic Oil Producing Co.'s No. 1 Dunlap, Stephens County, Texas. Depth 3,200 feet. Gray lime.

Properties of reaction in per cent	71.48
Primary salinity	28.534
Secondary salinity	None
Primary alkalinity	.026
Secondary alkalinity	.01
Per cent rSO4 in rSO4 plus rCl	
Constituents in parts per million	42306.5
Sodium	11507.7
Calcium	1950.3
Magnesium	110.0
Iron and Aluminum oxides	13.2
Sulphate	91250.0
Chloride	19.8
Carbonate	None
Silica	
Reacting values in per cent	
Alkalies	
Sodium	35.72
Alkaline Earths	
Calcium	11.16
Magnesium	3.12
Strong acids	
Sulphate (rSO4)	0.005
Chloride (rCl)	49.982
Weak acids	
Carbonate (rCO3)	.013

Hypothetically Combined as Parts Per Million Grains Per U. S. Gallon

Calcium carbonate	33.0	1.93
Calcium sulphate	12.7	1.07
Calcium chloride	31824.5	1845.32
Magnesium chloride	7637.4	442.97
Calcium chloride	107533.9	6236.97

June 24, 1924

Atlantic Oil Producing Co.'s No. 2 R. W. West, Stephens County, Texas. Depth 3,180 feet. Black lime.

Properties of reaction in per cent	
Primary salinity	72.36
Secondary salinity	27.546
Primary alkalinity	None
Secondary alkalinity	.094
Per cent rSO4 in rSO4 plus rCl	.006
Constituents in parts per million	
Sodium	14739.5
Calcium	3871.5
Magnesium	622.4
Iron and aluminum oxides	25.0
Sulphate	2.5
Chloride	31250.0
Carbonate	25.8
Silica	5.0
Reacting values in per cent	
Alkalies	
Sodium	36.18
Alkaline Earths	
Calcium	10.92
Magnesium	2.90
Strong acids	
Sulphate (rSO4)	.003
Chloride (rCl)	49.95
Weak acids	
Carbonate (rCO3)	.047

Hypothetically Combined as Parts per Million Grains Per U. S. Gallon.

Calcium carbonate	43.0	2.50
Calcium sulphate	3.5	.21
Calcium chloride	10563.6	612.69
Magnesium chloride	2437.2	141.36
Sodium chloride	37464.3	2172.93

June 24, 1921

Atlantic Oil Producing Co.'s No. 1 C. H. West, Stephens County, Texas. Depth 3,245 feet. Gray lime.

Properties of reaction in per cent	
Primary salinity	71.70
Secondary salinity	28.268
Primary alkalinity	None
Secondary alkalinity	.032
Per cent SO4 in rSO4 plus rCl	.008
Constituents in parts per million	
Sodium	35839.8
Calcium	9772.2
Magnesium	1535.4
Iron and aluminum oxides	90.0
Sulphate	9.0
Chloride	77000.0
Carbonate	21.0
Silica	10.0
Reacting values in per cent	
Alkalies	
Sodium	35.85
Alkaline earth	
Calcium	11.25
Magnesium	2.90
Strong acids	
Sulphate (rSO4)	.004
Chloride (rCl)	49.98
Weak acids	
Carbonate (rCO3)	.016

Hypothetically Combined as Parts Per Million Grains Per U. S. Gallon.

Calcium carbonate	85.0	2.03
Calcium sulphate	12.7	.74
Calcium chloride	27019.3	1567.16
Magnesium chloride	6012.8	348.74
Sodium chloride	91097.0	5283.63

June 21, 1921

Atlantic Oil Producing Co.'s No. 4 M. E. West, Stephens County, Texas. Depth 3,165 feet. Gray lime.

Properties of reaction in per cent	
Primary salinity	41.16
Secondary salinity	57.00
Primary alkalinity	None
Secondary alkalinity	1.84
Per cent rSO4 in rSO4 plus rCl	.32
Constituents in parts per million	
Sodium	209.4
Calcium	201.1
Magnesium	37.1
Iron and aluminum oxides	3.3
Sulphate	770.0
Chloride	12.3
Carbonate	4.5
Silica	
Reacting values in per cent	
Alkalies	
Sodium	20.58
Alkaline earths	
Calcium	22.63
Magnesium	6.79
Strong acids	
Sulphate (rSO4)	.18
Chloride (rCl)	48.92
Weak acids	
Carbonate (rCO3)	.92

Hypothetically Combined as Parts Per Million Grains Per U. S. Gallon.

Calcium carbonate	20.5	1.19
Calcium sulphate	4.7	.32
Calcium chloride	530.5	30.77
Magnesium chloride	145.3	8.43
Sodium chloride	532.2	30.87

LISBON FIELD ACTIVE WITH SMALL OPERATORS

(Continued from Page 58)

port-El Dorado Pipe Line Co. was first in with a 4-inch line. The Atlantic Oil Producing Co. was second with a 4-inch line from its farm near Smackover, and the Lion Oil & Refining Co. was third with another 4-inch line. It is rumored the Kettle Creek Refining Co. and Magnolia Pipe Line Co. are planning lines for Lisbon, but neither report was confirmed.

Announcement for two gasoline plants in the field have been made. The Henderson Co. announced some time ago its intention of starting construction work on a plant April 1. A few days ago the Natural Gas & Fuel Corp. announced its plans for a natural gasoline plant, to be located in the heart of the new pool. The latter company has two 4-inch fuel lines running into the field to supply an ample fuel supply for the increased drilling campaign. One of the lines extends from the Norphlet sector and the other from the El Dorado Field.

In July, 1922, Keene and Woolf, El Dorado operators, drilled a test on their Slaughter lease in SE SW SW, Section 10-17-16. The operators held considerable acreage in the wildcat territory. But the well offered little encouragement for further exploration in that area. It was completed for a 10-bbl. well but abandoned when the operators turned to the development of more promising territory in the South Arkansas fields.

They permitted their now valuable leases to expire because of the failure of their wildcat to be completed into a commercial producer and the existence of dry holes surrounding.

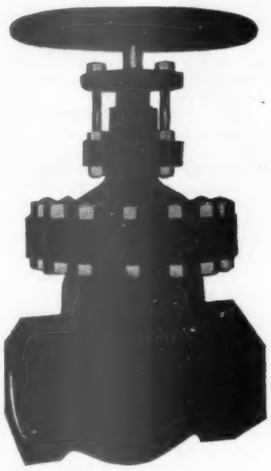
Then on December 31 of last year, Raines and associates drilled the discovery well in Lisbon in the SE NW SW, Section 9-17-16, and completed it for a 35-bbl. producer at 2,073 feet.

Big Companies Shunned Area

The completion of this well failed to excite the major operators because of the Keene and Woolf well and a 2,562-foot dry hole in the NE SW, Section 8-17-16. Two 10-bbl. producers in Section 10 made the territory all the more puzzling and the major companies shunned the area.

The independent operators were watching the territory eagerly, but they, too, evinced the reluctancy of the major concerns. However, the lure proved too attractive to the independents and they started the development of the field.

Later the Simms Oil Co. purchased the



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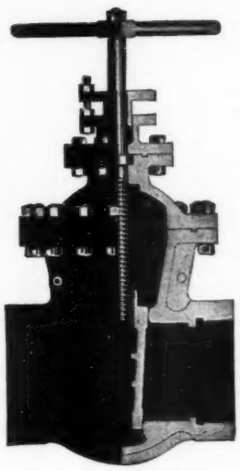

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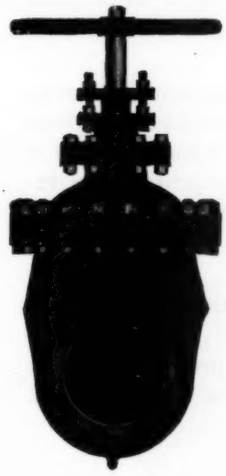

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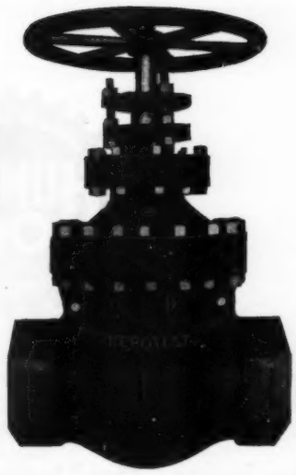

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Raines interest in the field. During the past few weeks several of the larger companies have bought valuable acreage, but the smaller companies and operators still have the cream of the productive area.

Rapid development of the field started only a few weeks ago when good wells in the southwest quarter of Section 16 gave the field brighter prospects. The best well to be completed in that area thus far is the Wingfield and associates' No. 2 Slaughter in Section 9. It came in for better than 1,000 bbls. and caught fire a few hours later. The fire was extinguished quickly and the well was completed for a 1,000-bbl. producer. On March 25, the A. E. Slaughter lease, comprising the entire southwest quarter of Section 9, was producing better than 3,000 bbls. daily.

East and West Defined

The dry hole in Section 8 and the small producers on the now western edge of the pool have dampened the ardor of operators to drill in that region. The same condition exists on the east side. Two dry holes offsetting the other in the northwest lowers the prospects there and the water showing in what appears to be a small well in Section 10 on the Oil Fields Oil Corp.'s lease only adds more hazard to drilling on the east side.

The test to be drilled by the Southern Crude Oil Purchasing Co. in the SW cor. Section 3 is expected to tell the fate of the northeast area. The Ohio Oil Co. and the Imperial are both rigging up to drill the south extensioner tests in the northwest and northeast corners respectively of Section 21.

Several companies, including the Pure Oil Co. and the Gulf Refining Co., have bought close-in acreage during the past week and reported to have paid stiff prices. The Pure company bought in Section 3 and the Gulf in Section 21.

On March 25, the Rovenger Oil Co. had seven wells producing 455 bbls. daily. The Atlantic had five wells making 950 bbls. The Marine's three wells were making 1,000 bbls. and Wingfield and associates' two wells were producing 1,105 bbls. daily.

Simms Oil Co.'s quartet of producers were making 220 bbls. Natural Gas & Fuel Corp. had two wells making 485 bbls. and Reynolds and Marr had a pair making 35 bbls. daily in Section 15. Miller and Cottingham's No. 1 was doing 310 bbls. daily and the Lion Oil & Refining Co. was getting 115 bbls. daily from one well.

Like all fields, Lisbon furnishes its transportation problem. The pool is about 4 miles east of the town of Lisbon and 8 miles northwest of El Dorado. Lisbon has no railroad and consequently all field supplies come from El Dorado.

The main highway is a fairly good road, but when turning off it into the road leading to the field the truck driver's worries start. Farmers are reaping a fair harvest on rainy days and days following a soaking rain.

It is nothing uncommon to see a team, or possibly two teams, tugging at a heavily loaded truck mired in mud to its axles. Even old buckboards are being put to use by scouts and oil men desirous to get to the field on a stormy day.

But despite all her handicaps Lisbon is the most active area in Arkansas, and, though its area appears to be small, an active drilling campaign will write its story within the next few weeks.

KENTUCKY-TENNESSEE

(Continued from Page 60)

Co. is progressing at 1,000 feet. It is being made under the supervision of Pat Smith.

In 1896 the Forest Oil Co. struck oil on the Thomas Reynolds farm, 4 miles east of the Tan Bark well, in the Trenton sand at 1,510 feet below the Chattanooga black shale. Seven miles west of the Tan Bark the Henry Oil Co. of Chicago, struck a good oil showing in its test on Crickett Creek at 1,490 feet below the shale.

A number of wells drilled in the vicinity of Wolf River found oil in both the upper and lower Sunnybrook sands which has petered out long ago, and these may be carried on down to the deeper horizon.

The Tan Bark Pool is located in north central Fentress County on the half-way ground between the Tinsley Bottom Pool in Clay and Jackson Counties and the Bone Camp Pool in Morgan County, Tennessee.

Tinsley Bottom Pool

Development in the Tinsley Bottom Pool of Clay and Jackson Counties, Tennessee, is on the wane due mostly to the inclement weather. The recent strike of Dafoe and associates on the Hamp Lynn farm is said to be making 8 bbls. on the pump from a total depth of 431 feet, 144 feet below the Pencil Cave.

Two wells recently drilled on the Crawford Mill anticline, along the right of way of the Stoll pipe line, both had good oil showings in a sand picked up at around 300 feet. These wells were not drilled deep enough to pick up the pay that is producing at Tinsley's Bottom and may be drilled deeper in the near future. It is a fact that if the wildcatters would pay more attention to plotted structures and to logs of wells already drilled there would be fewer dry holes credited to this section of the Volunteer State.

Week's Work

The same number of completions, two less producers, a decrease of 247 bbls. in flush production, one more dry hole and one additional gas well is the record made during the past week in the Kentucky fields, when compared with the week previous. The wells were distributed by counties as follows:

County—	Comp.	Wells	Prod.	Dry	Gas
Cumberland-					
Monroe	3	1	15	2	0
Barren	3	1	8	2	0
Warren	3	3	6	0	0
Johnson-Magoffin	3	2	5	1	0
Owensboro District	2	1	25	1	0
Lawrence-Johnson	2	2	12	0	0
Morgan	2	2	8	0	0
Estill	2	2	2	0	0
Floyd	1	0	0	0	1
Allen	1	0	0	1	0
Total	22	14	81	7	1
Last week	22	16	328	6	0
Difference	0	2	247	6	0

Eastern Division

In the eastern Kentucky division during the week but 10 wells were reported completed, the production of the 8 producers being but 27 bbls., 1 was dry and another was a gas well. This does not mean that there is a scarcity of territory to develop for such is not the case as thousands of locations still remain to be drilled in the North and South Weir fields of Lawrence, Johnson and Magoffin Counties. The small amount of work doing is caused by the bad weather that has prevailed for two or three months. In these counties alone the next few weeks should see the rush of the drill. In the North Weir Field, the Swiss Oil Corp., Garrison & Townsend, Cumberland Petroleum Co., Indian Tex Petroleum Co., Keaton Oil & Gas Co., Eastern Kentucky Oil Co., E. E. White, W. M. Stone and others hold acreage that looks good for several wells and with pipe line facilities even small strippers are worth the drilling, especially where power plants for the pumping of wells have been installed.

To the northeast of the town of Redbush, also in the North Weir Field, lies the gas producing area where more than 100 wells have been drilled in the past. There is a good market for gas the same as for the crude and much development work should be shown with the advent of spring. The Mid-South Oil Co., Carroll Oil & Gas Co. and several smaller concerns have a considerable acreage to drill, some of which is virgin.

In the South Weir Field the R. G. Gillespie interests, Bed Rock Petroleum Co., Clyde Oil Co., Structure Oil Co., Kentucky-Indiana Oil Trust, New Domain Oil & Gas Co., Somerset Oil Co., Oliver Jenkins, Petroleum Exploration Co., Browning & Co., Hudson & Collins, Carter Oil Co., Model Oil Co., J. H. Arnett, Holbrook & Co., Elkhorn Coal Co., and numerous others have considerable territory to develop before their holdings are drilled up.

Floyd County, also an oil producing

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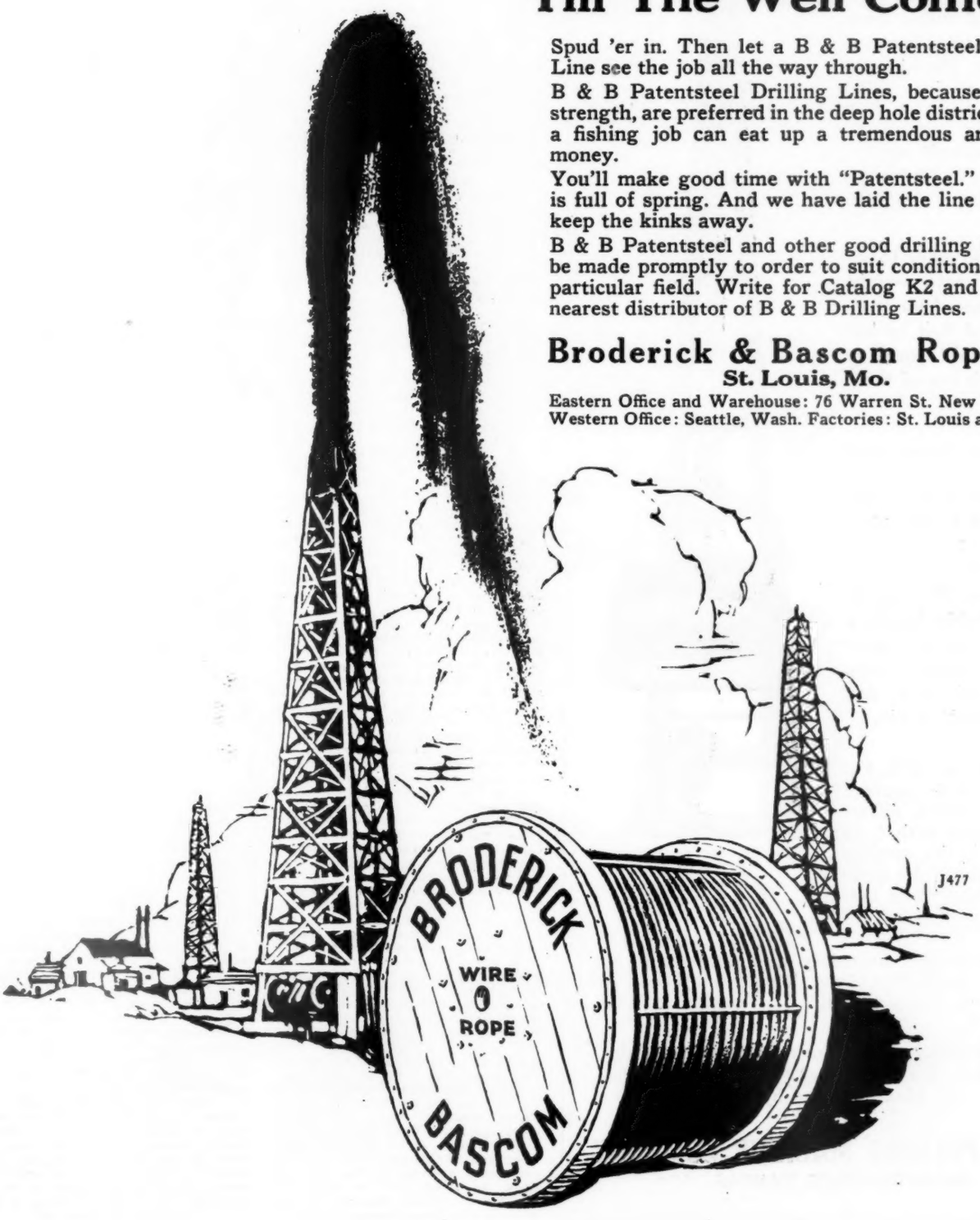
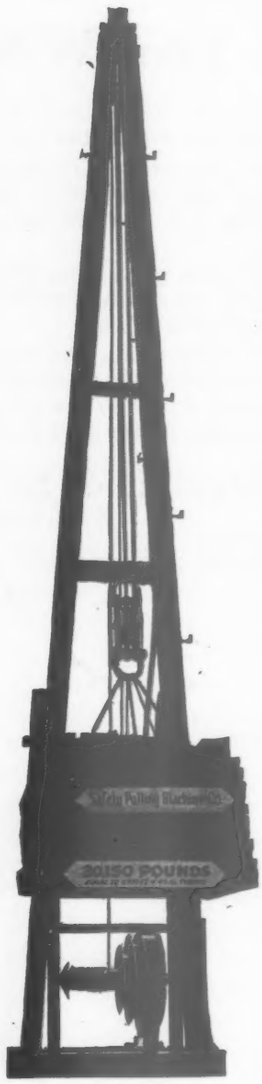


Eclipse Deepwell Pulling Machine

That one company recently purchased 6 of these machines to be used in a country 6,000 miles from the United States is proof this Pulling Machine is good.



Eclipse Deepwell up to 8000 ft. 2" Tubing Weight 3645

Wreckers also made to order, approximate weight 5000 lbs. One of our customers stated that he has pulled a weight equal to 100 tons with one of these machines.

Specifications Deep Well

Mast 8x10x36 ft., Douglass Fir A-Style Two Wheel Truck, two 16" Bronze bearing crown pulleys, 2½ Steel Pin mounted in malleable boxings. Large supporting plate 16" dia. between crown pulleys, eliminating any chance of bending pin.

Reel or Drum; 32 lb. 8¼ casing filled with concrete for winding drum, differentials banded with 3/16 band iron, brake surface 6"x40", choke brake style same as Star drilling machine.

The whole reel assembly is mounted on 2¾ square steel shaft extending clear through reel, secured by three heavy castings.

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county, attracts more attention from natural gas hunters and some very fine gas wells are being found. Among the leading operators or companies making a heavy play for gas are: The Ohio Fuel Oil Co., Louisville Gas & Electric Co., New Domain Oil & Gas Co., Distill-Martin Co., East Carbon Black Co., American Roller Mills Co., Yolando Oil Co., and others. This is in the Beaver Creek Belt, of Floyd County. Martin County adjoining has been a source of supply of natural gas for many Kentucky cities for a number of years, although a goodly amount of the natural fuel is utilized by the carbon black plants. Lee and Owsley Counties are also a source of considerable gas which is piped to various consumers as well as used in carbon plack plants. In this area, near Idamay, the Petroleum Exploration Co. has a large carbon black plant and has drilled quite a number of gas producers in advance of the oil producing parts of the two counties. Many gas producers have been drilled in the past in Clay, Knox, Whitley and other counties in the southeastern part of Kentucky. Gas has been utilized for nearly 20 years from wells of Knox County and a much longer time for the Martin County Field. The Standard Oil Co. of Kentucky has uncovered numerous nice gas pockets in the Clay County area.

North Weir Field

In District 32, in the North Weir Field of Lawrence-Johnson Counties, the Swiss Oil Corp.'s No. 36 on the P. P. Holbrook tract, near Ayresville, is reported at 10 bbls. flush, while in District 22, same area, the same company's well on the Caney Sparks, is light, being estimated at 2 bbls.

South Weir Field

In the Johnson-Magoffin Counties' area of the South Weir Field, R. G. Gillespie's test on the F. M. Hale lease, in District 29, is reported at 3 bbls. Hudson & Collins' No. 7 on the Oscar Wheeler in the same district, reported at 2 bbls.

In District 27, the Clyde Oil Co.'s second test on the William Powers lease, is reported a duster.

Other Completions

In the Ophir Field, District 30 of Morgan County, the Willson Oil Co.'s second well on the Kelley Owens lease, is reported at 5 bbls. This is to the southwest from the North Weir Field. Conley Brothers' test on the Willie Blanton tract, same field, shows for 2 bbls.

Miller and Chiles' Nos. 6 and 7 A. G. Wagers tract, in District 10 of Estill County, are reported at 1 bbl. each from the shallow Irvine sand.

Some new work is getting under way in Lee, Owsley, Wayne, Clay, Knox, Morgan and Wolfe Counties, but it will be some time before they are completed.

Western Division

The most important well of the week in the west end of the Blue Grass State is credited to the Sulphur Creek district of Cumberland County. It is the Kanawha Oil Co.'s initial test on the J. E. Rush place estimated good for 15 bbls. from the Sunnybrook sand encountered at from 360 to 382 feet. Eight and a quarter-inch casing was set at 135 feet. The sand in this test was very porous and is considered the best yet found in the Sunnybrook formation.

At Kettle Creek the McClintock interests are drilling No. 10 Kerr to the sand below the Pencil Cave. The first Sunnybrook sand at 525 feet produced 1,000 bbls. of oil before going dry. These parties also got a duster in No. 1 Bedford Coffee in the sand at 850 feet and at 1,051 feet. Singles and others' No. 1 Kim Crawford, drilled about two years ago to a depth of 460 feet where it made considerable oil is being deepened to the Pencil Cave pays. The Young Oil Co. is progressing at 250 feet with its No. 2 J. Poindexter. This lease is in Monroe County, close to the Clay County, Tennessee line.

Other Cumberland County News

A disappointment was registered in the Pulsey Creek Pool, between the Sulphur Creek and Kettle Creek pools, when No. 3 J. M. Hughes, drilled by Reed, Heckathorn and McClintock, failed to show commercial production in the deep sand below the Pencil Cave at 1,071 feet. Nos. 1 and 2 on this farm are oil wells from the sand proved barren in No. 3.

On the West Fork of Crocus Creek, the Alta Oil Co. is down 100 feet and drilling in No. 2 C. T. Cheatham. On Crocus Creek proper, Sam K. Baird & Hickman's No. 1 J. Grider was making headway at 125 feet; their No. 2 J. H. Morgan was being spudded at 75 feet; Doctor Lang's No. 1 John Finley at Sulphur Creek is nearing completion at 490 feet.

Owensboro Field

The Pennsylvania-Indiana Oil Syndicate's No. 12 John Swope, in the Swope Pool of the Owensboro Field, was the best well completed in the entire Kentucky Field during the week. It was drilled to the Barlow sand at an approximate depth of 850 feet and is credited with 25 bbls. per day.

The wildcat venture made by the Petroleum Extraction Syndicate on the Kirk Woodward lease, near the hamlet of Ralph in Ohio County, was dry in both the Jett and Barlow sands. The Jett was struck at 500 feet and the Barlow from 707 to 727 feet.

The Leeper Oil Co.'s No. 6 Lone Helm, at Pellville, which was brought in several weeks ago making 60 bbls. in the Jett sand, seems to be far above the average producer in this immediate section as it is still pumping 40 bbls. per day.

Drilling Activity

The White Plains Oil & Gas Co.'s No. 4 McBrayer, in the Midkiff Pool, is showing for a good well from the Barlow sand; its No. 2 Midkiff was delayed in completion by a break down.

The Chicago Petroleum Syndicate has been having more than the ordinary amount of trouble on its new well on the Gunther-Gant tract. The first of the week there was a fishing job. Then following an extensive cave-in, which has taken several days to overcome. The drillers have reached the Barlow sand in this well and indications point to a good producer. This is No. 3 well on this farm. No. 1 was a duster, while No. 2 is one of the best producers in the field.

Jack Loman's No. 1 Joe Bob Ellis, near the Guenther-Gant, is progressing at 350 feet; C. E. Daugherty's No. 9 Crowe is on top of the sand and will be in the first of the week.

The Foster Oil Co. is making satisfactory progress in its No. 2 on the Col. Powers farm and it should be completed within a few days.

Cornell & Weatherhott's No. 1 Askin, adjoining the Ellis farm, is spudding in; Damron & Miller are starting a well on the King; L. J. Emery, Jr., & Sons Co.'s No. 1 Cicero Whittinghill at Trisler, near Rockport is being started. The Leeper Oil Co. is moving a rig to the Lone Helm tract in the Herbert schoolhouse district; the Pennsylvania-Indiana Oil Syndicate's No. 2 Laura Mercer is in the Barlow sand and showing for a well; Bert Thompson's No. 2 W. B. Gabbart is being cleaned out after a shot.

Barren County

Two dry holes and one producing well is the record of the past week in the Barren County Field. There are, however, several wells on top of the pay sand that are showing for excellent producers, especially the No. 16 Duff being drilled by the Consolidated Gas Co. This well has the earmarks of a 20-bbl. starter and as it is 1,800 feet from other production it is an important development. The Duff farm is 3 miles north of Glasgow in the Beaver Creek Pool.

In the Gorby Pool, adjoining the Emery-Moore, J. W. Porter's first attempt on the Chamberlain was dry and plugged in the deep pay. In the same area, the Hiland Oil Co.'s No. 14 Cassidy is pumping 8 bbls. from the sand at 185 feet below the black shale.

The new Lecta Pool, 3 miles east of Glasgow, got a set-back during the week when the Wood Oil Co.'s attempt on the Keaton proved unproductive from any of the sands where production is now being found in this county.

Three Pipe Line Being Laid

Since the opening of three new pools since the first of the year in Barren County, several new concerns have entered the field and have acquired considerable acreage. One of the largest to enter is the Stoll Oil & Refining Co., of Louisville, Ky., which is laying a line

(Continued on Page 120)

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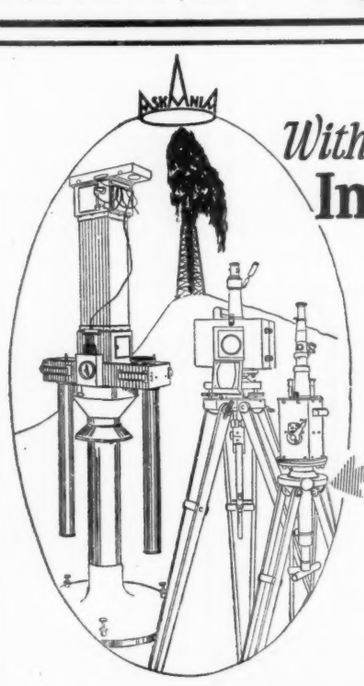

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GAIN IN PETROLEUM EXPORTS AND DECLINE IN IMPORTS SHOWN

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Apr. 3.—The monthly summary of the Bureau of Foreign and Domestic Commerce showing imports and exports for February and for the past eight months ending with February, available today, shows the value of the total exports of petroleum and its products for February to be $40,993,579, compared with $32,894,001 for February of last year.

For the eight months ending February the total exports in value was $324,451,137, compared with $280,229,388 for the same period of 1925.

The total value of imports of petroleum and its products for February was $8,479,615, compared with $10,276,142 for February, 1925. For the eight months period the total value of these imports was $62,829,307, compared with $72,558,500 for the same period of last year, all of which came in free of duty, and practically all of which came from Mexico. The figures in detail follow:

The percentage of bulk shipments over shipments of gasoline in containers was increased last February over those of the previous February. In February the shipments showed 116,500,840 gallons in bulk and 16,802,245 gallons in containers, whereas in the previous year the bulk shipments were 84,164,506 gallons and those in containers 16,519,292 gallons. The United Kingdom topped the list of takers of gasoline with 55,345,251 gallons, an increase from 33,888,865 gallons in the previous year; France was second with 19,625,379 gallons compared with 20,391,378 gallons in the previous year. The Netherlands were third in the list with 7,582,930 gallons, an increase from 2,105,178 gallons in the previous February; Italy was fourth with 6,639,377 gallons, an enormous increase from only 700,564 gallons in February, 1925. Germany was fifth in the list with 6,261,000 gallons in February, being a decrease from 7,399,179 gallons in the previous February. Gasoline was exported to 28 countries in February, only illuminating oil having a wider export distribution, with a record of going to 31 foreign countries. Hungary and Sweden were distinctive in getting no gasoline from the United States in February. However, during the eight-month period, the United Kingdom led as a place of export for gasoline, taking 263,404,174 gallons, with France second with 188,692,356 gallons, Canada third with 58,411,340 gallons, Australia fourth with 46,480,219 gallons, and Germany fifth with 35,900,359 gallons.

DOMESTIC EXPORTS OF PETROLEUM AND REFINED PRODUCTS

	—Month of February—		—Eight Mo. End. February—	
	1925	1926	1925	1926
Petroleum—				
Crude . . . . . gallons	46,720,004	44,059,477	437,216,355	366,723,856
Crude . . . . . $	1,967,327	1,787,703	15,787,911	16,572,519
Total refined . . . . . gallons	277,392,565	354,489,176	2,563,576,744	2,744,527,145
Petroleum . . . . . $	28,985,450	36,947,062	248,540,951	289,728,731
Gasoline, naphtha and other light products . . gallons	100,683,798	133,303,085	783,768,777	934,034,927
Same . . . . . $	14,343,035	19,484,971	105,901,985	141,342,456
Oils—Illuminating . . gallons	54,697,611	65,283,226	605,886,994	613,250,769
Illuminating . . . . . $	4,901,706	6,397,491	56,487,760	57,588,101
Gas and fuel . . . . . gallons	95,123,560	122,737,844	938,495,686	937,572,307
Gas and fuel . . . . . $	3,565,039	3,947,013	33,526,033	31,606,278
Lubricating . . . . . gallons	26,769,297	32,812,192	232,908,465	255,056,085
Lubricating . . . . . $	6,143,091	7,043,237	52,291,762	58,587,585
Other refined petroleum products . . . . . gallons	118,299	352,829	2,516,822	4,613,057
Same . . . . . $	32,579	74,350	333,411	604,311
Paraffin wax . . . . . pounds	25,601,139	28,708,995	234,853,738	235,837,661
Paraffin wax . . . . . $	1,423,631	1,539,066	12,434,882	13,165,174

Canada Takes Most Crude

Canada as usual took the greater portion of the crude, the quantity taken in February being 32,749,677 gallons, valued at $1,331,741, compared with 22,940,083 gallons valued at $812,789 in February, 1925. During the eight-month period Canada took 281,821,441 gallons compared with 254,565,973 gallons in the same period of last year. For the crude exports to Canada for the eight months ending with February the total price obtained was $12,952,360, whereas for the same eight months of the preceding year $8,951,645 was paid. It will be seen that the total price obtained for the eight months exports ending with February, was about 25 per cent greater than that paid for exports of the previous eight-months period, although the quantity shipped was only about 12 per cent greater.

Germany took of crude only 56,936 gallons compared with 6,096,750 gallons in the previous February, and in the eight months period only 9,480,824 gallons compared with 17,349,848 gallons in the corresponding period of the previous year.

There were no shipments of crude to the United Kingdom in February.

Crude shipments to Cuba dropped in February to 976 gallons from 7,066,365 gallons in the previous February, and in the case of Mexico the decrease was from 5,295,905 gallons in February, 1925 to only 45,006 in the same month of this year. Japan, however, took 4,543,474 gallons in February, an increase from 2,730,220 in February, 1925. Japan, during the eight-month period was the only country except Canada that increased its imports of crude over the same period of the previous year, the increase being from 19,194,325 gallons for the eight-month period ending February 1925, to 27,885,662 gallons for the later period.

Refined Exports

The market for the export of mineral spirits (a substitute for turpentine) dropped from 73,735 gallons in February, 1925, to 42,056 gallons last February. However, it shows a substantial increase for the eight-month period from 585,335 gallons for the eight months ending February, 1925, to 684,479 gallons for the later period.

Illuminating Oil

Illuminating oil exported in February amounted to 65,283,226 gallons of which 49,752,870 gallons went abroad in bulk and 15,530,356 gallons in containers. In February of the previous year the exportation of illuminating oil was 54,697,611 gallons, of which 36,117,818 gallons was in bulk and 18,579,793 gallons in containers. Here again the tendency is seen to increase bulk shipments over shipments in containers.

Gas and fuel oil exported in February amounted to 122,737,844 gallons compared with 95,123,560 gallons in the previous February, going to 21 countries.

Lubricants Exported

What are designated as "insulating or transformer oils" appear in the list of petroleum products exported in February the quantity being 117,552 gallons for February, and the value being $38,976.

The total lubricating oil exported in February was 32,812,192 gallons, an increase from 26,769,297 gallons in the previous February. Of this total, red and pale oil amounted to 20,156,369 gallons, black oil 1,162,828 gallons, cylinder oil 11,457,056 gallons, and light oils in small packages to 35,939 gallons. France took more lubricating oil than any other country, the quantity in February being 7,035,188 gallons, the United Kingdom coming next with 6,989,648 gallons, Belgium third with 3,023,523 gallons, and British India fourth with 3,012,582 gallons, Germany being fifth, with 2,283,860 gallons and Italy sixth with 1,690,771 gallons.

Residuum and other petroleum prod-

ucts exported in February aggregated only 193,221 gallons compared with 44,564 gallons in February, 1925.

Lubricating greases were exported to the extent of 8,148,403 gallons.

Paraffin wax exports amounted to 6,587,558 pounds of unrefined and 22,121,437 pounds of refined wax. This paraffin wax went to 23 countries, but Italy led all of them in the quantity taken, the amount being 6,246,801 pounds, the United Kingdom took 5,994,235 pounds, Spain 1,400,857 pounds, Mexico 1,569,555 pounds, China 4,696,721 pounds and Japan 1,711,808 pounds.

Petroleum asphalt was exported to the extent of 12,244 tons and petroleum coke 2,169 pounds.

CITES ADVANTAGES OF NATURAL GAS FUEL

(Continued from Page 64)

channel to the refinery of the Humble Oil & Refining Co. at Baytown.

The line has been tested by a high pressure closed test from end to end.

Coming out of the field, it is tested to withstand a pressure of 500 pounds to the square inch. The severity of this test can best be illustrated for domestic consumption on a pressure of about two ounces per square inch.

Three welded lines are installed at the river crossings, and a cable bridge across each river is walked daily by a line inspector. Three lines are used instead of one in order to insure, as far as possible, against interrupted service.

The foregoing matters indicate the extreme precautions now being employed to preserve and maintain uninterrupted service.

The matter of sufficiency of supply next arises.

The pipe line now supplying Houston is connected with 16 wells, having a daily open flow capacity of approximately 650,000,000 feet, or about 160 times the average daily distribution of artificial gas in Houston during 1925.

Nine of these wells are within a 40,000-acre block at Lucas in Live Oak County, under one ownership and operation, where all the conservation rules have been and can continue to be observed. This particular field has sustained practically no depletion, and the estimated recoverable supply of gas from present producing sands is enormous.

Ten wells are drilling in the area to which the pipe line is now completed in order to obtain and hold available at all times if possible a supply in excess of the then requirements of the pipe line.

Again, anticipating the future and playing safe against the unforeseen as far as possible, the pipe line now supplying metropolitan Houston has acquired a further large supply of gas from producing properties in the Cole-Bruni and Carolina-Texas gas fields in the Laredo district, about 70 miles distant from the present terminus of the completed line, and this extension will be made in due season.

In conclusion, I think it a fair assumption that the industries of metropolitan Houston are now and will continue to receive the best fuel at cheap prices for a long period of time, and in sufficient volume to insure the great industrial expansion and development that the natural and other advantages of the Houston district so richly warrant.

CENTRAL WEST

(Continued from Page 60)

a test on the Masan Townsend, Section 9.

Lee A. Watson is drilling a wildcat on the G. F. Tresruth, Section 28, Patterson Township, Darke County.

In McLean Township, Shelby County, L. T. McGrath is working at a test on the Henry Ernst, Section 9. In Cynthian Township, the Wittmer property trustee is drilling No. 4 Joe Seigel farm. Mansfield Oil & Gas Co. started No. 9 Charles F. Bergman and W. E. McKelvey and others are drilling No. 5 Henry Wissman, Section 34.

Indiana

Some new work is springing up in various parts of Indiana, but new completions are few. Reports from Veale Township, Daviess County, are that the Maple Oil Co.'s last well on the John Peek, Section 21, is showing for better than 25 bbls. In Monroe Township, Pike County, the Gem Oil Corp.'s second test, 200 feet from the south line and 590 feet from the west line of the George A. Taylor, in southwest quarter of Section 9, pumped 20 bbls. Top of sand was struck at 1,277 feet; first showing of oil at 1,284 feet, and drilled to a total depth of 1,306 feet. In Madison Township, same county, the Ohio Oil Co., abandoned No. 4 Sarah J. Thomas, Section 30.

Bell Brothers have a rig up for a wildcat well on the Lulu P. Harvy farm, Section 15, White River Township, Gibson County. In Washington Township, same county, the Ohio Oil Co. is drilling No. 4 W. A. McRoberts, Section 7.

Wheeler and others' wildcat on the William Meissner, Section 11, Cass Township, Dubois County, near the town of Huntingburg, is reported in and shot, but the outlook of the well is not announced. The shot was put in by Walter Johnson, shooter for the Eastern Torpedo Co., of Ohio County, Kentucky.

From Decker Township, Knox County, comes information that the well on the Steckler farm, Section 25, just south of the Wabash River, 2 miles below Little Rock, struck a nice showing of oil at 1,471 feet. How much oil the well will make will not be known until cleaned out and put on the pump. The Steckler farm is the next farm down the river from the Perry Cunningham farm, upon which five wells were drilled a few years ago, four of which wells had traces of oil and one well flowed for several months. This territory is all just across the Wabash River from the Allendale, Ill., Field, and two other wells are drilling, one on the Payne & Fox, near the Claypool Hills, and the other on the Ballentine farm, 3 miles northeast of the Steckler well and near Wabash Pond. The Ballentine well is down 1,600 feet and has passed through three dry oil sands and is now drilling for the McCloskey sand at around 2,000 feet. The Payne-Fox well is down around 1,000 feet.

Illinois

About the only new completions for the week from Illinois comes from the Wabash County area near Allendale and Friendsville. In the Allendale Field, the Adams Corner Oil Co.'s No. 7 Mack Madden, Section 7, Wabash Township, is reported with a flush around 75 bbls. W. C. McBride, Inc.'s No. 4 on the southeast corner of the J. H. Cisil, in the northeast quarter of Section 24, is good for 10 bbls.; sand tapped at 1,436 feet and drilled 36 feet in. The Mahutska Oil Co.'s No. 3 well, 600 feet from the south and west lines of the Mack Madden, in the southwest quarter of Section 7, is reported at 65 bbls.; sand at 1,457 feet, and drilled to a total depth of 1,510 feet. The test of R. Donathan and others, 1,300 feet from the south line and 200 feet from the east line of the H. S. Shaffer, in the northwest quarter of Section 11, a short distance northwest of the Allendale corporate limits, was drilled to a depth of 1,586 feet and proved a failure. This well is between the Stillwell Pool and the Biehl Pool.

A large portion of the oil interests in Wabash County these days is centered in the Friendsville area, where wells are drilling, have been drilled in or are in immediate prospect. The few days of good weather recently indicated that there would soon be a grand rush of activity. In this section the Jabez Taylor well, 2 miles north of the Bass farm discovery well, drilled by Miller and others in Section 7, Friendsville Township, went to a depth of 1,685 feet, where an immense salt water flow was found. The well has been given up as a failure and the outfit will be moved to the Hartwick farm, where a test was drilled several years ago with an oil showing, with prospects of opening up a new pool. The School House well of Joe S. Young, Jr., and others, just east of Friendsville and a little northwest of the Bass farm well, has been put on the pump and is making 75 bbls. or more. Same company's well

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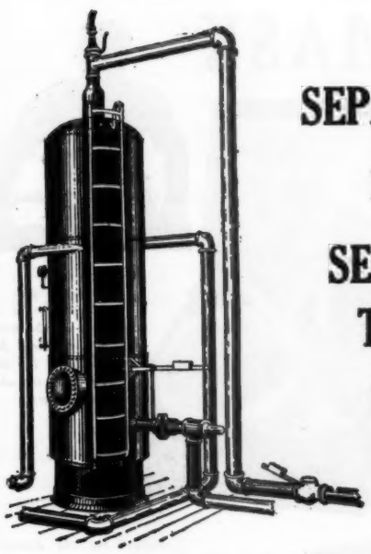

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on the Price, east of the School House well and an offset to the Bass well, is still being cleaned out.

In Dennison Township, Lawrence County, the Citizens Oil Co. abandoned No. 6 J. M. Gee, Section 20, and No. 7 A. M. Legout, Section 29. The Maple Oil Co. did the same with No. 10 Jane Jones, Section 29. The Ohio Oil Co. is drilling No. 11 on the Elydia Ridgley, Section 11. It was upon this farm that some years ago a new sand was found and named the Ridgley sand.

White & Moran drilled a test on the William Freeland, Section 15, Grandville Township, Jasper County, getting a 2-bbl. pumper.

In Honey Creek Township, Crawford County, Phipps, Cawood and others' No. 6, on the northeast corner of the L. N. Tohill farm, in the northeast quarter of Section 31, produced 25 bbls. from a depth of 967 feet. In Oblong Township, the Ohio Oil Co. is drilling No. 10 E. D. Culp, Section 19, and the Mahutska Oil Co. is doing the same at No. 19 A. Reedy, Section 18.

The Ohio Oil Co. is drilling No. 23 on the J. S. Phillips, Section 18, Parker Township, Clark County.

Going to Wildcat

From Grayville comes announcement by the Mercury-Independent that another well to test the possibility of oil pools in the vicinity of Grayville will start within a few weeks, according to announcements made by backers of the project. Grayville is in the extreme northeast corner of White County, where White, Wabash and Edwards Counties meet, also on the Wabash River. Leasing of a large block of acreage in various directions from Grayville has been under way for several months.

Directly west of Grayville and between there and Mill Shoals, a couple of tests were drilled some years ago, both having nice showings of oil, but at that time big producers were found in the Bridgeport, Robinson and Casey Fields to the north and the low price of crude was against the producing of what would be considered small showings in those days.

CRACKING VITAL IN ROCKY MOUNTAINS

(Continued from Page 32)

has the gasoline line been able to run very far above the fuel oil line.

In 1918 the crude run to stills averaged about 1,000,000 bbls. a month—and in 1925 a little over 2,000,000 bbls. a month. And while the crude run to stills has a little more than doubled in eight years, the gallonage output of gasoline has tripled, of fuel oil has doubled and of kerosene has increased about 50 per cent.

Greater Gasoline Yield

Thus the Rocky Mountain area confirms the tendency, clearly indicated in the other refinery areas, of obtaining from the average barrel of crude oil a constantly increasing amount of gasoline and a smaller amount of fuel oil. However, this swing away from fuel oil and towards gasoline has not been as striking in this area as, for example, in the Oklahoma-Kansas area, the chief reason being that in 1918 the Rocky Mountain refineries were already getting 38 per cent gasoline. The changes in the proportionate output of the four major products are shown in the following table—all amounts in percentages

Year	Recovery Gasoline	Recovery Fuel Oil	Recovery Kerosene	Recovery Lub. Oil
1918	38.0	43.7	11.2	.6
1919	38.1	44.9	10.5	.5
1920	43.0	*	*	2.1
1921	43.1	36.6	8.8	1.6
1922	44.2	40.1	8.9	1.4
1923	44.3	41.0	8.9	1.3
1924	46.9	38.9	7.2	1.4
1925	48.0	37.0	7.3	1.9

*See small graph.

Less Fuel in Storage

As concrete proof of how completely the old problem of stored fuel oil has been solved, the large graph shows that during 1922, 1923 and 1924 the amount of fuel oil in storage was very substantially less than the monthly production—in fact during these three years the fuel oil in storage was about equal to 15 to 20 days production.

In 1925, however, the fuel oil storage curve followed normal lines running low at the close of 1924 and early months of 1925, building up during the summer and fall, and starting downwards in the early winter. January 31, 1926, showed a fuel oil stock of 59,000,000 gallons against a January output of about 36,000,000 gallons, the curves for both production and storage having shown decreases for each of the three preceding months.

In the Kevin-Sunburst (Montana) Field, with its large increase in crude production and in refining capacity and a relatively limited market, especially for fuel oil, the situation is very similar to the early days in Wyoming—and it is possible that they will eventually find as satisfactory a solution of their problem.

Every year, except 1925, the gasoline storage curve in this area has been normal, swinging from a midwinter low to a midsummer high. In 1922, however, gasoline stocks started to climb even though they followed the regulation seasonal curve, and on January 1, 1926, stood at 165,000,000 gallons with the probability that they would increase for several months before showing the first decrease. Regardless, however, of where Rocky Mountain gasoline storage goes in 1926 it is practically all in the hands of large units—and will not be a menace either to its own area or to the country in general.

Many Handicaps

Situated in the midst of a vast mountainous country, sparsely settled, with few manufacturing industries, with limited local markets, with both crude production and refinery output far in excess of local needs and 1,000 miles from a major market, every step of the development of the refinery industry in the Rocky Mountain area has been beset with the possibility of failure.

And that a potentially dangerous situation has not been permitted to become a really dangerous one is due to the foresight and cooperation of both producers and refiners whose interests, with rare exceptions, have been conserved in the development of the industry in this area.

Comparing the monthly runs of crude to stills, as shown in the upper section of the accompanying graph, with the annual production of crude oil during recent years gives an interesting side light on how refinery operations have been held down to market requirements rather than allowed to ebb and flow with the current production of crude oil. All amounts in barrels:

Year—	Crude Production	*P. L. and T. F. Stocks Dec. 31
1918	12,809,000	915,000
1919	13,383,000	164,000
1920	17,282,000	636,000
1921	20,950,000	1,635,000
1922	29,261,000	1,991,000
1923	47,653,000	19,704,000
1924	42,856,000	28,672,000
1925	35,386,000	28,980,000

*Pipe line and farm stocks.

Crude Stock Increase

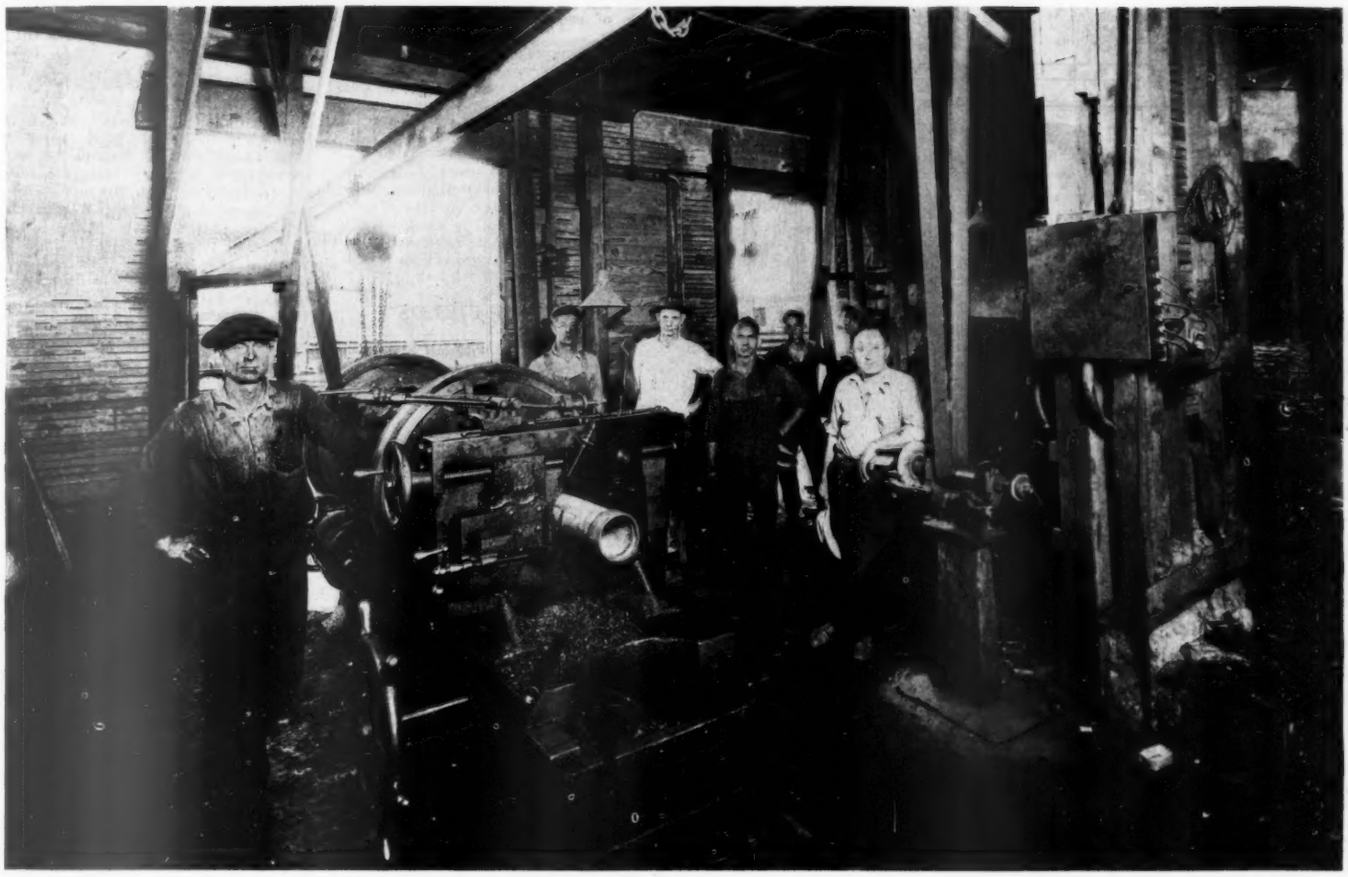
The fact is outstanding that while, at the close of 1925, crude production was about three times as much as in 1918 the pipe line and tank farm stocks were over 30 times as much as at the close of 1918.

At the close of 1925, the following products were in storage at refineries in this area:

	Gallons
Gasoline	164,283,000
Kerosene	13,732,000
Fuel Oil	66,695,000
Lubricating oil	7,319,000

Adding to the above the other refined products in storage and converting all of them into barrels we find that on December 31, 1925 there were in storage at refineries in the Rocky Mountain area approximately 8,500,000 bbls. of finished and partly finished products. There were also in storage at refineries in this area 1,197,000 bbls. of crude oil. Adding this oil to the pipe line and tank farm stocks of December 31, 1925, gives a total of slightly over 30,000,000 bbls. of crude oil in storage in this area on that date as compared with 8,500,000 bbls. of refined products.

This ratio of about 4 bbls. of crude in storage to 1 bbl. of refined products is an interesting one, particularly as the future tendency of the industry will probably be along the line of having a larger



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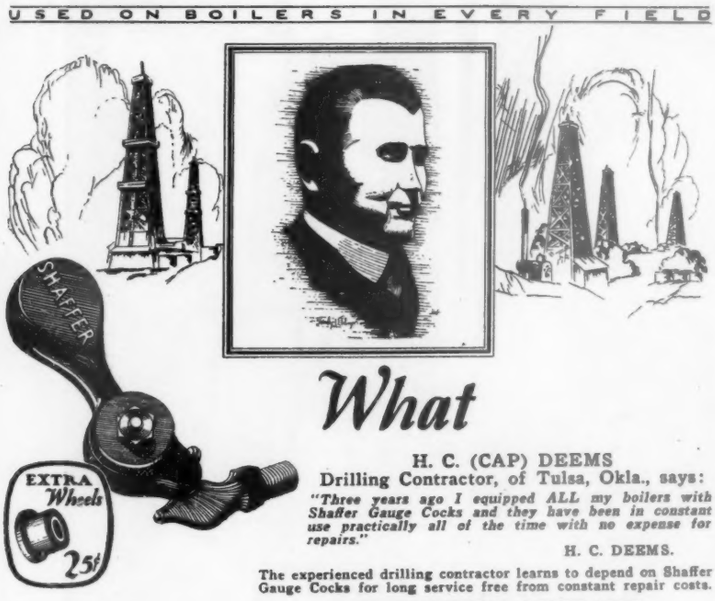

What

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proportion of the total storage in the shape of crude oil rather than refined products.

In studying the accompanying graph one finds no trace, except it be the gasoline storage line, of the fact that in 1923 the Rocky Mountain area had a "flood of oil" that, proportionately, was as great as those in California and in the Mid-Continent.

And probably the outstanding difference today between the Rocky Mountain area and California is that on the Pacific Coast practically no oil is cracked while in the Rocky Mountain area over 40 per cent of the gasoline comes from cracking stills.

EASTERN FIELDS

(Continued from Page 58)

farm. In Washington district, Pleasants County, J. C. Dinsmore & Son's No. 8 on the F. F. Brown farm is dry in the Cow Run sand.

In Cameron district, Marshall County, the Manufacturers Light & Heat Co. has a gasser in the Gordon sand at No. 3 on the D. W. McConaughey farm. In Clay district, Wetzel County, the same company's No. 3 on the Thomas Little farm is a gasser in the same formation. Anderson & Williamson have a gasser in the salt sand at a test on the Thomas Moore farm, located in Union district, Tyler County. In Ten-Mile district, Harrison County, Burke & Lyons completed in the Maxon sand a test on the W. T. Williams farm. It is a gasser.

Test Wells

In Fairmont district, Marion County, the Bell Oil & Gas Co. has started to drill a test on the Curtis Miller farm. In Liberty district, Marshall County, the Manufacturers Light & Heat Co. is due in the Gordon sand at a test on the Thomas & Sarah Blake farm. In the same district, Burley & Orndoff are down 1,600 feet on the Franklin heirs farm. In Center district, Wetzel County, the Manufactuers Light & Heat Co. is due in the Gordon sand on the Rachel and A. T. White farm. In Church district, the Round Bottom Oil & Gas Co. is drilling at 1,200 feet on the Lewis heirs farm. In Harper district, Roane County, W. W. Smith has started to drill on the William W. Smith farm. In Sardis district, Harrison County, Hoffmire & Deegan are rigging up on the W. A. Rogers farm.

In Smithfield district, Roane County, Godfrey L. Cabot has started to drill on C. H. Butcher and W. H. Harless farms. In Washington district, Calhoun County, Morris & Cain have started to drill on the Nancy Jarvis farm. In Elk district, Harrison County, the Grasselli Chemical Co. has started to drill on the O. B. Thornburg farm. In Sardis district, Hoffmire & Deegan are building a rig on the W. A. Rogers farm.

Marion County

In Paw-Paw district, Marion County, the Owens Bottle & Machine Co. has started to drill on the J. P. Musgrove farm. The same company is drilling at 1,300 feet on the Laura A. Brock farm. In Battelle district, Monongalia County, the Pittsburgh & West Virginia Gas Co. has made the location for a test on the Clark Tennant farm. In Lincoln district, Marion County, the Owens Bottle & Machine Co. is due in the Gordon sand on the E. R. Freeland farm. In Center district, Wetzel County, the Hope Natural Gas Co. is rigging up on the F. E. Miller farm.

In Union district, Lincoln County, the Union Oil & Gas Co. is placing a drilling machine at a location for a test on the Burton Breedlove farm. In Jefferson district, the Cambridge Gas Co. has placed a drilling machine at a location on the Horse Creek Land & Mining Co.'s tract. In Union district, the Union Oil & Gas Co. is fishing on the Julius and W. Cooper farm. In the same district, the Columbia Gas & Electric Co. is rigging up on the Rich Lovejoy farm. In McComas district, Cabell County, the Transylvania Petroleum Co. is building a rig on the Bird May farm.

In Grant district, Ritchie County, the American Oil Development Co. has started to drill a second test on the Abraham Middleton farm. In Spring Creek district, Wirt County, the Southern Oil Co. is building a rig on the C. C. Dewees farm.

In Jefferson district, Lincoln County, the Cambridge Gas Co. is rigging up at a test on the Horse Creek Land & Mining Co.'s property. In Barboursville district, Cabell County, Zortman & Shipe are fishing at 3,325 feet on the M. E. and C. Merritt farm. In McComas district, the Commercial Gas Co. is drilling at 3,800 feet on the Charles Morrison farm. In Liberty district, Marshall County, the Manufacturers Light & Heat Co. is rigging up on the Sanford Huggins farm. In Clay district, Wetzel County, the Johns Gas Co. is skidding the rig on the B. W. Peterson farm.

Southeastern Ohio

In the way of furnishing new production, the southeastern Ohio fields promise to supply a greater amount during the current month than for any like period in more than a year. This is all due to the good producers completed in the deep sand territory during the month. At the same time the Niagara lime territory supplied some very creditable gas wells, all located in Guernsey County.

In Fall Gore Township, Hocking County, the Reno Oil & Gas Co.'s No. 8 on the Harry K. Starr farm is a gasser in the Berea grit. In the same township, Westbrook Brothers' test on the John Starr farm is dry in the same formation. In Section 30, Starr Township, the Eureka Oil & Gas Co. drilled a test on the Oscar Hutchinson farm through the Clinton sand and dry.

In Section 1, Madison Township, Licking County, E. D. Edmonds & Co. have a light pumper in the Berea grit at a test on the J. W. Neibarger farm. In Section 6, Newton Township, the same parties have a 5-bbl. pumper at No. 6 on the Eilen E. Forry farm. The rig for No. 7 on the same farm has been completed. In the same township, F. M. Rugg & Co. have a 4-bbl. pumper at No. 3 on the Clinton B. McKinney farm.

In Knox Township, Jefferson County, B. W. Cooper and others are drilling a test on the B. W. Cooper farm. S. H. Boyce & Co. have a rig up on the W. L. Groves & Co. farm. In Washington Township, Carroll County, the Natural Gas Co. of West Virginia is drilling a second test on the Jesse Harrington farm. In Springfield Township, Brown, Vorhees & Co. are due in the sand at a test on the Dorrance heirs' farm.

Week-End Completions

The southeastern Ohio made a poor showing at the close of the week. All completions are located in shallow territory and none better than light pumpers. In the northwest quarter of Section 21, Jackson Township, Knox County, the Margaret Oil Co. completed and shot in the Berea grit No. 4 on the C. H. Davidson farm good for 12 bbls. a day.

In the northeast quarter of Section 25, Center Township, Noble County, J. H. Yearin & Co. completed in the Buell Run sand a test on the J. A. Robinson farm. Just a light show of oil was developed and the well will go into the discard. In Section 7, Franklin Township, Licking County, Hazlett & Glasshave completed and put to pumping in the Berea grit a second test on the Austin Orr farm. It produced 12 bbls. the first 24 hours.

Niagara Lime Tests

In Adams Township, Guernsey County, the Ohio Oil Co. is drilling at 2,425 feet at a test on the Walter F. Mehaffey farm. The same company is rigging up on the Frank Ankrum farm. Locations have been made on the James Mercer and Alice B. Mahaffey farms. The Pure Oil Co. is still shut down on the Elizabeth Irwin farm. The Logan Gas Co. is down 750 feet on the Seward R. Williams farm. The Cambridge Oil Co. has drilled to a depth of 2,500 feet on the L. W. Uterzumber farm and shut down. In Cambridge Township, the Ohio Fuel Gas Co. is rigging up on the C. O. Watson W. C. Morrison and Lola Shrum farms. The same company is building a rig on the Albert Woodburn farm.

In the southwest quarter of Section 21, Harrison Township, Perry County, J.

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Walsmith and others have drilled a test on the J. W. Barber farm through the Clinton sand to a total depth of 3,554 feet. It is showing for a 20-bbl. producer. In the Fisher Pool, Section 23, Alexander Township, Athens County, the Ohio Oil & Gas Co. completed and shot in the Clinton sand No. 4 on the F. R. Baker farm good for 10 bbls. a day.

In the southwest quarter of Section 16, Grandview Township, Washington County, the Peoples Savings Bank No. 2 has completed No. 7 on the Coin Kirkbride farm. It is a light pumper in the Keener sand and a small gasser in the Big Injun sand. In Section 13, Brown Township, Knox County, the East Ohio Producing & Refining Co. has a 5-bbl. pumper in the Berea grit at No. 4 on the George A. Richert farm.

Athens County

In Alexander Township, Athens County, J. H. Harmon and others drilled a test on the C. P. Riley farm through the Berea grit. It showed some oil, but when shot salt water broke in and it will be abandoned. The same parties are contemplating starting another test on the same farm. In the same township, the Ohio Oil & Gas Co. is drilling another test on the W. N. Alderman farm. The Biddle Oil & Gas Co. is drilling a second test on the Biddle heirs' farm.

In Lot 16, Hanover Township, Licking County, the Hope Construction Co. has placed rig timbers at a location for a test on the Susan A. Miner farm. In Lot 13, the same company has rig material at a second location on the Hanover Brick Co.'s property.

In Section 1, Franklin Township, Licking County, Moore & Adams have drilled No. 16 on the T. L. Stevens farm through the Berea grit and showing very little oil. Levi Hall & Co. have a very light pumper in the Macksburg 800-foot sand at a second test on the Charles F. Miser farm, located in Section 10, Noble County.

In Fearing Township, Washington County, Otto Becker & Co. have a duster at No. 3 on the Jacob Young farm. The rig for No. 4 on the same farm has been completed. In Section 24, Salem Township, E. A. Metcalf has started to drill a test on the Hannah Ferm farm. In Section 53, Charles D. Hoffman is drilling a second test on the William L. Schramm farm.

Gasser in Greene County

About all of the completions in the southwest fields are gassers or dry holes. In Perry Township, Greene County, the Peoples Natural Gas Co. has drilled its test on the F. H. Haines farm through the Bayard sand to a depth of 3,201 feet. It is a good gasser in this formation. In the same county and township, the Dunn Mar Oil & Gas Co. has drilled a second test on the Ensley Lemley farm through the same formation and has a gasser good for 1,500,000 feet at a total depth of 3,225 feet.

In Dunkard Township, Green County, the Carnegie Natural Gas Co.'s test on the J. W. King farm, an old well drilled deeper, is dry in the Bayard sand. In Richhill Township, the same company's test on the J. L. Barney heirs' farm is a gasser in the Big Injun sand good for 1,500,000 feet. In Springhill Township, the Peoples Natural Gas Co. has a gasser in the Big Injun sand at a test on the Mrs. Patrick Taylor farm.

ALBERTA OIL LANDS TAX

CHATHAM, Ont., Apr. 3.—The new Municipal Districts Act before the Alberta legislature empowers municipalities to assess oil and gas leases "at their fair actual value" separately from the surface rights, and to tax them at a rate of not to exceed 2 per cent of the assessed valuation of all lands and minerals in the district. This right was contained in the old act, but was overlooked by most of the municipalities, the exceptions being Patricia municipality in the Viking Field and Stockton municipality in the Turner Valley Field. The province of Alberta two years ago attempted to tax mineral rights, but the act was disallowed by the Federal Government as an indirect tax.

BUYS GAS PROPERTIES

OKLAHOMA CITY, Okla., Apr. 3.—The Southwestern Gas & Fuel Co., a subsidiary of the Southwestern Light & Power Co., has bought the gas properties of the Western Oklahoma Gas & Fuel Co. at Duncan and Marlow and assumed operation of these properties. The properties consist of the complete gas distribution systems in both towns, together with transmission line to the gas trunk line of the Oklahoma Natural Gas Co. The company is supplying 1,800 gas customers in Duncan and 600 gas customers in Marlow. This brings the total number of towns now being furnished gas for the company to five, the company already having gas franchises in Lawton, Temple and Altus.

DURANT SEES BRIGHT FUTURE FOR DOMESTIC OIL BURNERS

"The position of the oil burning unit in domestic use, is precisely the same as the refrigerating system years ago," said W. C. Durant, automobile manufacturer and one of the directors of the Independent Oil & Gas Co., upon the occasion of his first visit to the headquarters of the Independent company in Tulsa this week.

"In years past," said Mr. Durant, "the cold air system of refrigeration was a thing for industrial use only, but it has been developed to a point where it is now feasible for use in every home. I regard the oil burning unit in the same light, and believe that it has an equally brilliant future."

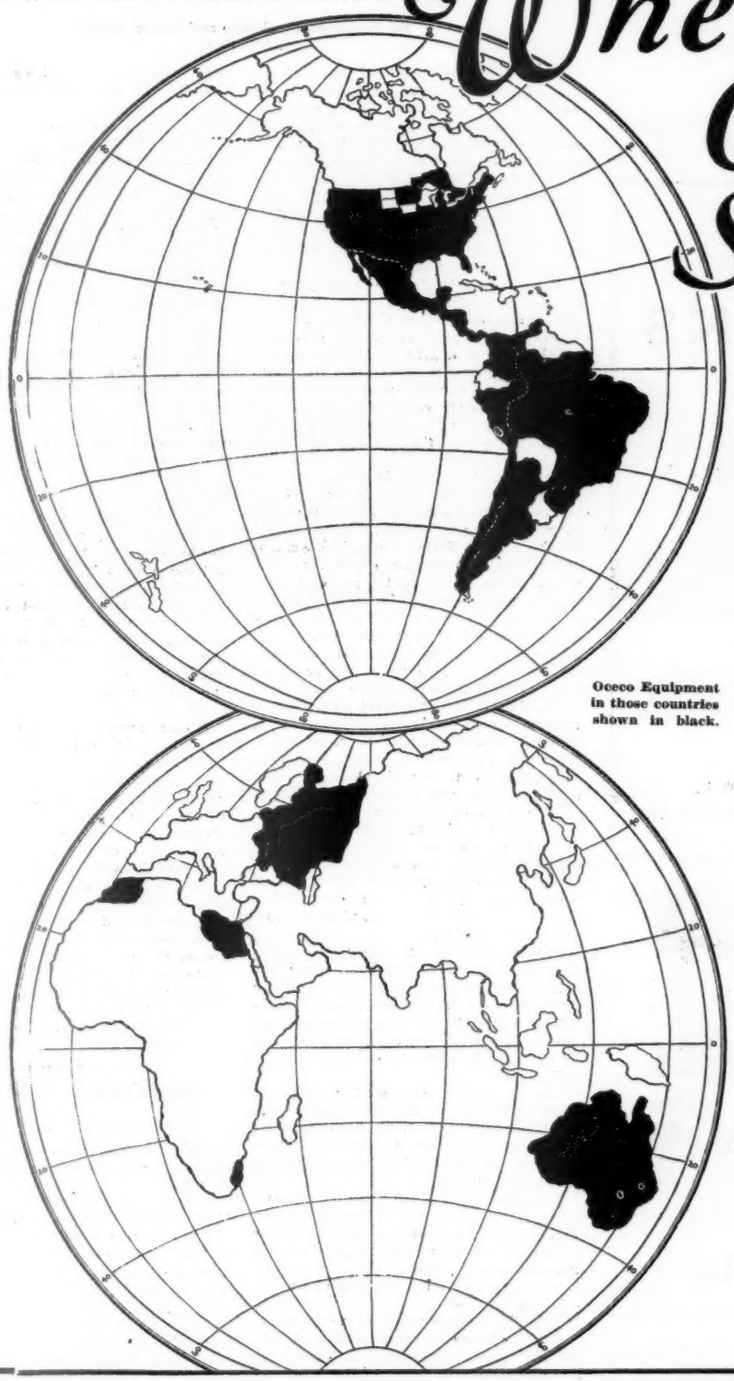
The noted financier who was accompanied to Tulsa by W. J. Zucker, vice president and general manager of the Stewart-Warner Speedometer Co. of Chicago; J. Donald Duncan of New York, second vice president of the Independent O.l & Gas Co.; and Don M. Kelley of Kelley, Drayton & Converse, New York, all of whom are directors of the Independent Oil & Gas Co.

Mr. Durant ascribed his visit to Tulsa, as the fulfillment of a desire to see the properties of the Independent Oil Co., and to become acquainted with the personnel of the organization. It is the first time since he had become interested in the Independent company that he has had an opportunity to visit the operating offices of the concern, and he announced himself as being well pleased with the workings of the company.

"One hears a great deal of talk about the huge stocks of oil products that are stored above ground," remarked Mr. Durant, "but I am of the opinion that the present stocks of petroleum products are not at all excessive when compared to the consumption, and also when compared with stocks of other materials. It must be remembered that we have less than one year's supply of petroleum products in storage, and there will surely come a time when the discovery of big pools will be halted. The increased percentage of dry holes indicates that the discovery of oil is becoming more difficult, and with this in mind, I am very glad to note that the industry is taking some steps toward the conservation of this valuable mineral. I view the petroleum situation of course, in relation to the motor industry, as there is a growing interdependability between the two industries."

With E. H. Moore, president of the Independent company, and the members of his party, Mr. Durant left Tulsa for a trip over the properties of the company including the newly acquired refineries and pipe line system at Okmulgee. The party returned to New York Wednesday night.

Wherever Oil is Stored



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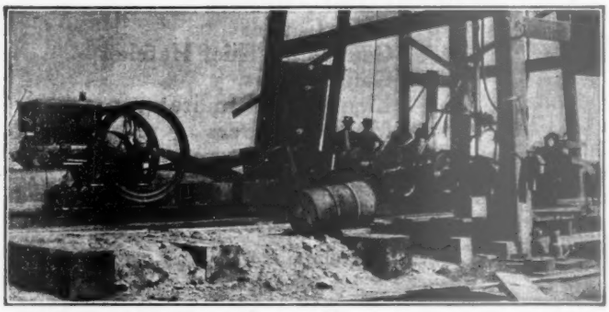

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MICROTHERMAL OBSERVATIONS OF SOME CARBONACEOUS ROCKS

By Taisia Stadnichenko and David White*
(Abstract)

The study here reported on includes the observation and determination by means of a microfurnace of the temperatures at which the optically distinguishable fossil components and their derivatives in the varied organic conglomerates that make up the different types of "oil shales," bituminous shales and other carbonaceous rocks change their optical character, volumes and state of matter, some at least, of which changes are incidental to chemical change.

The work was funded mainly by a number of petroleum geologists through the National Research Council. Preliminary experimental apparatus was provided, through a grant from the American Association, for more than 200 diameters, with accurate control of temperature up to 900 degrees Centigrade and was designed and constructed for the special purpose in the Carnegie Geophysical Laboratory. Helium for use as an inert atmosphere was furnished by the United States Bureau of Mines. Working space, instruments and other supplies, including storage battery, were provided by the United States Geological Survey.

Examinations to date cover a number of oil shales of different types and some of the same types at different stages of carbonization, several cannels, and some bituminous or carbonaceous shales, together with a few coals and bogheads. At this stage of the study it appears that:

Results of Study

(1) The different organic fossil components—spore exines of various kinds, cuticular fragments, algal debris or colonies, waxy and resinous bodies, etc.—in a given section of the oil shale or other rock have different temperature zones of change, most of the components exhibiting several noticeable changes of color or volume as the temperature rises. These temperature distinctions are due to original differences in the chemical composition of the fossil components, though they have been altered since deposition as sediments.

(2) In some of the plant structures, like those of the fatty algae, which are more readily observable, the different parts, such as the cell laminae, the fatty thickening of the walls, and the cell contents, react at different temperatures due to initial differences in chemical composition.

(3) In certain commodities—e.g. the fatty thickening of Reinschia—the main volatilization occurs instantaneously at a definite temperature. In some other commodities the changes are masked and not so clearly definable.

(4) The "ulmic" or "humic" groundmass or "biochemical concentrate" regarded by many geologists as the source of the oil, seems in cases to pass through two or more phases or zones of notable change with reduction in volume at different temperatures.

(5) The temperatures of temperature zones of change in the groundmass seem to vary according to (1) the type (presumably original composition) of the concentrate, and (2) its stage of natural carbonization.

(6) In some rocks the critical temperatures or zones of change are rather higher when the section is heated rapidly than with slower heating; but where melting and volatilization take place at a definite temperature, time and rate of heating apparently have no effect.

(7) The effects of oxidation are readily detected; and oxidation even to a slight extent reduced the yield of oily and volatile substance.

(8) In the final stage, the thin section presents a black carbon residue, the thickness and pattern of which naturally vary according to the volatile matter contained in the different fossil components or the groundmass.

Views Developed

In short, the microthermal observations lend support to the views earlier developed in the paleontological study of the supposed mother rocks of petroleum, (1) that the different fossil organic constituents and the "ulmic" groundmass in the conglomerate deposit differ more or less from one another in chemical composition and, accordingly, yield their volatile substances at different temperatures; (2) that the "ulmic" groundmass, and probably to an extent the various fossil inclusions also, yield volatile substances at different temperatures in different types of the rock and in the same types at different stages of natural carbonization—an observation important in oil shale treatment; and (3) that, since the different fossil vestiges and organic groundmass vary in their chemical composition, they probably vary both as to the relative volume and as to the qualities (composition) of the condensible products yielded on distillation, whether in the retort or by natural geological processes.

According to the objective plan, in which this study is merely the beginning of the first step, the microthermal observations should be followed by experimental distillations of the same rocks in retorts assuring uniform heat throughout under accurate temperature control, so that test cuts may be taken off at the temperatures corresponding to the changes in the components noted under the microscope. The detailed chemical study of a series of such cuts should not only throw invaluable light on the importance of each of the readily visible constituents in the rock and of the organic groundmass as sources of distillates generated at least, the quality of the distillate (the hydrocarbon compounds) yielded by each—i.e., it should go far toward tracing the qualities as well as the quantities of the distillates back to their organic sources. Through analogy and inference, a better understanding may be reached of the origin of the natural petroleums and of the relations between the characters of the oil and the characters of the mother rock. Collectively, the studies should aid in opening the door to an attack on the problem of the fundamental chemistry of petroleum from the genetic standpoint.

*Before American Association of Petroleum Geologists, Dallas, Tex.

KENTUCKY-TENNESSEE

(Continued from Page 108)

to the Emery-Moore and Hall Baker pools, already served by the Paragon Refining Co. The Stoll company is, according to reports, paying a premium of 25 cents a barrel for this oil. The Paragon is building a line to connect with the Lecta Pool, 3 miles east of Glasgow.

There is bound to be some stiff competition in Barren County due to the entry of the Stoll Refining Co. as there is not enough oil in the entire county for two separate gathering systems and one will eventually have to step out unless some agreement can be made. The Paragon Development Co., which has been serving Barren County operators for the past two years, is paying the highest Somerset prices for the crude, while the Stoll company is going to pay a premium of 25 cents per barrel, according to reports. The Stoll company recently laid a pipe line in Tennessee to take care of the production at Tinsley's Bottom.

Other Completions

In Warren County Brand & Henderson's No. 5 J. M. Morgan, Davenport Pool, is a 2-bbl. pumper at 1,320 feet, approximately 100 feet below the shale; T. A. Sheridan's No. 4 C. G. Davenport, 2 bbls. at 1,336 feet; New Domain's No. 4 Bessie Snell Clark is making 2 bbls. from the Mississippian lime at 500 feet. The deep sand at 1,300 feet was barren.

The White Plains Oil & Gas Co.'s No. 21 W. P. Tabor in the Gainesville Pool, Allen County, is a 1-bbl. stripper at 515 feet.

Forty-eight Years ago

A Mississippi packet brought to this old plantation a shipment of Byers Pipe

ABOUT twenty miles above New Orleans, on the east bank of the Mississippi, stood the old plantation home of the Destrehans. Surrounding it, all the way from levee back to the swamps, were waving fields of sugar cane.

In 1878 a packet boat brought to this plantation a shipment of Byers Pipe which had come down the river from Pittsburgh.

The year was a memorable one in those parts, for the Mississippi Delta was swept by a terrifying epidemic of yellow fever. The cabin of the boat which brought the pipe was cluttered with the corpses of fever victims who had died on the way from Memphis.

In this cabin, the plantation manager receipted for the pipe and proceeded to install it for supplying water from the river to the sugar factory, half a mile distant.

The pipe remained in the moist loam for forty years. When dug out in 1918, the scene had greatly changed. The cane fields were gone. A modern petroleum refinery had replaced the old sugar factory, burned to the ground in 1912. *But the pipe was still good. It had suffered so little from corrosion that every foot of it was salvaged for use about the new refinery.*

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BYERS PIPE

GENUINE WROUGHT IRON

SOUTHWEST TEXAS

(Continued from Page 46)

Section 43 of the C. T. Simmons survey, 150 feet from the north and 800 feet from the west lines. Houston Oil Co. is drilling No. 16 H. Cartwright in its gas field in the J. M. Colchade survey, 4,800 feet to the southwest of its No. 15.

George B. Pickett's No. 2 George West in Live Oak County cored in the contract of the Frio & Fayette at 1,190 feet. Claims that every well is wildcat in Live Oak County and that logs will not correlate is disputed by Mr. Pickett who is a geologist and mining engineer. The No. 2 George West cored a fossil bed at the bottom of the Frio formation, the core showing almost solid oyster shells and it is claimed that logs of other wells will show this peculiar fossil formation always at the bottom of the Frio.

Guadalupe County

The Texas Company is moving in on the August Glenwinkle in Guadalupe County, a little southeast of Kingsbury and several miles south of the Luling Field.

Karnes County

Earl B. Reynolds tested his No. 1 Butler at around 3,000 feet last week and got a considerable showing of live oil and some water. The well had about 34 feet of sand but because of inability to control the water the casing will be pulled and the well plugged and abandoned. Considerable interest has been attracted to the showing of oil in the well and disinterested judges believe it might have made a well and possibly a good sized one if the water could have been shut off. Mr. Reynolds is confident he has proven a structure with oil entrapped and is planning to drill another test. The territory is far removed from any production and except for some wildcat tests drilled some years ago with showings of oil and gas at Runge and with an oil showing in a well at Kennedy the territory has been untested. The amount of water in the No. 1 Butler was not large, merely enough to flow over the top of the casing. There was enough gas to burn all day. The well is about 5 miles west of Runge. Previously the area has been unlogged, and a showing both at 2,600 feet and at 3,000 feet were spoiled by too deep drilling. With the log of No. 1 Butler as a guide the casing in the next test will be set above the 2,600-foot sand and a test made of that first. Magnolia had an interest in the well.

A major interest is blocking some acreage to the east of the Reynolds well.

Maverick County

Rycade Oil Co.'s No. 1 Chittim in Maverick County is drilling at 3,350 feet and the same interest's No. 1 Sullivan in Maverick is being abandoned at 1,700 feet due to a crooked hole and the rig skidded 15 feet to start another test.

Medina County

Gibson Oil Corp. completed No. 4 Viola Wilson at 981 feet in the Ina Field and the first day it pumped about 100 bbls. Production in the wells drops immediately and after considerable pumping and washing settles to about 25 bbls. Operators are in hopes that a better system can be found for handling the heavy oil in the loose sand and mucky shale so that greater production can be obtained. Arnett Oil Co. is bringing in its No. 3 Nixon with casing set at 832 feet. Golden West is drilling on No. 5 Schmidt and Ina Oil Co. expects this week to bring in No. 2 Viola Wilson, a mile to the west. L. Smith is down about 300 feet in No. 1 J. C. Jay on survey 531. Gibson Oil Corp. is testing a shallow sand at 465 feet in the No. 1 Saathoff in western Medina County on survey 847 and has spudded in No. 1 Carpenter on survey 808 south of Yancey and near an old gas well. Cecil Switzer of Shawnee, Okla., has cleaned out the No. 1 Zerr which has been standing at 1,112 feet and is setting 10-inch casing at that depth. Casing is now going into the hole. It is expected to set 8-inch at around 1,800 feet and carry the hole to at least 2,500 feet. Grayburg Oil Co.'s No. 1 P. S. Ward is taking a core at 1,750 feet. Alamo Drilling Co. is rigging up on two wildcat tests in the county, one just west of Noonan on the Haeberle survey and the other a few miles north of the Ina Field on the Louis Graff survey. Ina Oil Co. has completed rigging up on the Finger tract in western Medina and has started drilling with cable tools. Henderson & Holden up to late last week had not closed in the 10,000,000-foot gasser which they brought in a couple of weeks ago on the Adams tract south of the Ina Field at 903 feet. The 10-inch and 8-inch casing set in the hole have been cemented while the well was running wild and 6⅝-inch is now to be set to the bottom of the hole. Plateau Oil Co. rigged up and started drilling on survey 72½ in western Medina County on the Harrison tract.

Refugio County

Houston Oil Co. has secured permits to drill its Nos. 5 and 6 F. B. Rooke in Refugio County in the gas field on the T. Mullens survey, No. 5 being 50 feet from the north line and 200 feet from the east line and No. 6 being 1,550 feet south of No. 4.

Starr County

Dauchy & Bryant are drilling at 1,950 feet in the No. 1 Kelsey in Starr County on survey 125 and water line has been completed to the O. W. Killam test on survey 43 on the Guerra tract and drilling has been resumed on that. Southern Exploration Co. (R. E. Brooks) which had a big lease block extending from the river at Roma north is understood to have sold a half interest in the block to The Texas Company for a figure around $100,000.

Terrell County

E. T. Williams spudded in last week his test in Terrell County, 13 miles southeast of Sanderson on the Sowden land.

Travis County

Gulf Production Co. spudded in its No. 1 Parsons in Travis County in the northeastern part of the county.

Atascosa County

Witherspoon Oil Co. is rigging up on the Langley heirs No. 11 in the Somerset Field. Frontier Oil Co. is bringing in No. 10 S. J. Langley in the Somerset Field and has secured a permit to drill No. 11 in the J. Sharp survey No. 518.

Bastrop County

Alexander & Lyle are preparing to drill on Cedar Creek near the old Dixie test on the Litton farm. Mahone & Wilford have secured a permit to drill in Bastrop east of Elgin on the D. B. Dunk farm in Joseph Black survey No. 45, 150 feet from the north and west lines. It is a wildcat test. Andrews Petroleum Co.'s No. 1 Brundage, east of Elgin, at 2,876 feet is in the Edwards lime and dry thus far. The well looks like a failure but has been interesting due to the breaks of serpentine with slight showings of oil that might indicate the probable existence of a serpentine plug around there somewhere.

Bee County

Impassable roads and continuing rains have hindered moving rigs in south Texas. W. G. Clark is waiting for roads to dry to move his rig from the abandoned No. 1 test on the Scott farm north of Beeville to the new location.

Bexar County

Humble company has the derrick up for its fourth test on its block of acreage in Bexar County south of San Antonio. The block is a large one. A structure was shown and the first test was a small gasser and the other two got sulphur water. The new test is about a mile east of the Minna Coreth tests and is on the Yturri tract. L. W. Stieren and associates are preparing to drill on the Cover tract a little farther east in Bexar County from the Humble's new test. George E. Ginter is drilling below 1,700 feet in the deep test on the cotton mill land at Southton where a new pool has been developed at 650 feet. Jonray Oil Co. is fishing in its first shallow test at Southton at 630 feet with the well nearly on the sand. Utah Texas on the Ivan Vick is drilling at about 2,500 feet and presumably in the Buda lime.

Brooks County

Pittsburgh Oil Development Co. (Benedum & Trees) is waiting on rig which has been shipped from Bastrop to start the test on the Wormser ranch.

Brewster County

Green Valley Oil Co. has secured a permit to drill No. 4 J. P. Wilson in Brewster County on the S 5 B 212 T. & S. L. survey, 300 feet from the north and east lines. The first well drilled on the Wilson farm a few years ago made about 800 bbls. before it was lost at comparatively shallow depth.

Edwards County

X. K. Short with a showing of salt water in No. 1 Peterson in Edwards County at about 2,500 feet is preparing to move to a new location and start another test.

Fayette County

Red Bank Oil Co. is fishing for a bit in No. 1 Steinhauser at a depth of about 1,800 feet. Test is a little north of Flatonia. O. W. Killam is rebuilding the derrick on No. 1 Koether north of Schulenberg in Fayette County.

Gonzales County

Sun Oil Co. is ready to spud in its second wildcat test on the Nelson farm in Gonzales County, 1,400 feet from No. 1. F. E. Rue's No. 1 McVea, north of Waelder, is shut down pending making location for another test which will go deep. First test cored most of the depth for geological information with light rig. Joe Bruner's No. 1 J. Sweet, northwest of Waelder is drilling at about 2,500 feet.

ARTESIA, NEW MEXICO

(Continued from Page 50)

Section 21-18-28, on production; No. 3 Keyes, Section 21-18-28, on production; No. 40, SE of Section 29-18-28, cleaning out after shot; No. 41, SW cor. of NW of SW of Section 3-18-28, drilling; No. 42, Section 3-18-28, drilling at 400 feet; No. 43, SE cor. NE of Section 28-18-28, drilling at 1,000 feet; No. 44, NE of NW, Section 9-18-28, drilling below 700 feet; Fletcher Oil Co., Section 5-19-28, fishing; Frontier Petroleum Co.'s No. 2 McQuigg, Section 4-18-2, cleaning out after shot; No. 4, drilling below 1,785 feet; No. 10, Section 4-18-28, spudding in; Levers, Carper No. 2, NE of SW, Section 3-18-28, swabbing after shot; Levers-Wilson No. 5, Section 18-18-28, drilling below 2,850 feet; Mesa Oil Co.'s No. 1, Section 4-19-28, drilling below 3,150 feet; McFrederick, Eppenauer No. 1, Section 15-19-25, drilling below 2,900 feet; Ohio Oil Co.'s No. 1 Edgerton, Section 18-18-29, drilling below 2,750 feet, oil showing; Ohio Oil Co.'s No. 1 New States, Section 8-18-28, cleaning out after shot; No. 9 New State, Section 4-18-28, drilling below 3,625 feet; No. 10 New State, drilling at 2,100 feet; Ohio Oil Co.'s No. 1 Marion, SE NE, Section 5-18-28, waiting shot; Ohio Oil Co.'s No. 1 Toomie-Allen, Section 28-18-28, drilling at 1,870 feet; Ohio Oil Co.'s No. 1 Toomie Allen, Section 28-18-28, on production; Picher Oil & Gas Corp.'s No. 2, Section 12-18-27, drilling in; A. H. Ramage, No. 1, SW of SE of Section 2-18-28, drilling below 2,335 feet; Shaw & Rathke No. 1 Danciger, Section 2-18-28, fishing at 3,050 feet; Snowden & McSweeney's No. 4, NE cor. of NE of NW, Section 33-18-28, cleaning out after shot; Swartz, Compton & Eaton, Brainard permit, Section 5-18-27, drilling at 800 feet; Wade & Bujac, No. 1 Goodale, Section 19-18-28, drilling below 1,200 feet.

Lea County

Maljamar Oil & Gas Corp.'s No. 1, Government permit, Section 21-17-32, 3,000 feet 8¼-inch casing set, drilling resumed; Maljamar Oil & Gas Corp.'s No. 1 on Mitchell permit, Section 5-17-32, drilling below 300 feet; Maljamar's No. 1, Beardsley permit, Section 5-17-32, location made; Maljamar's No. 1, Pearsall permit, NE cor. of Section 33-17-32, drilling below 300 feet; Ross No. 1, Section 27-10-32, drilling below 2,150 feet.

Chaves County

Arkansas Gas & Fuel Co.'s No. 1, Manning Dome, SE cor. Section 14-15-17, fishing for dropped pipe; Colorado Gas & Fuel Co., Section 16-8-27, drilling at 4,825 feet.

CANADIAN FIELDS

(Continued from Page 54)

landed it was found that the sand and boulders had risen inside the pipe. After working for several days with the ordinary fish-tail bits a special roller bit was ordered. With the 10-inch pipe landed and the hole cleaned out rapid time should be made till it becomes necessary to take cores of the formation. Samples will be taken every 10 feet and forwarded to the Government petroleum engineer at Calgary and the Geological Survey at Ottawa.

Edmonton-Wainwright's No. 1, Section 29-45-6w4, which is located only 600 feet from British Petroleum's No. 3-B, has been running double tower and is drilling at 1,700 feet. Interior Oil Co., formerly the Wainwright Oil Producers Syndicate, shut down at 1,120 feet last fall on Section 36-44-7w4, will resume drilling with a standard outfit early in April. Some 12,000 acres of new leases have been filed on, chiefly in Township 46-1w4, lying east of the Wainwright and Baxter Lake district.

Nelson Legge, representing outside interests, has filed on 2,160 acres northeast of Wainwright, in Townships 44, 45 and 46, Ranges 1 and 2, west of the fourth. L. H. Miller and N. J. McDonald, representing a Calgary syndicate, have filed on 13,000 acres on the anticline running east from Wainwright to beyond the Saskatchewan boundary. The Calgary interests are planning to drill a series of five tests on these holdings.

In western Saskatchewan, extensive filings have been made at the Prince Albert land office on territory in the vicinity of Lloydminster. Oil seepages into a 160-foot water well on the John Marren farm, 12 miles east of the Alberta boundary, started the Lloydminster boom. The seepages were first noted when cattle refused to drink the water; and samples skimmed from the well were sent to the University of Alberta, analysis showing 75 per cent of distillate.

In the boundary field of Southern Alberta, Imperial Oil, Ltd.'s Erickson Coulee well, 25 miles east of Coutts, will likely spud in the first week of April. At Coutts, Urban Oils, Ltd.'s No. 1 Moodie, Section 4-1-15w4, is shut down waiting for casing. In the southern foothills, west of Nanton, Imperial Oil, Ltd.'s Rice Creek well, Section 4-14-2w5, will resume drilling early in April. This test is down 4,025 feet and has been shut down through the winter.

In the Medicine Hat Field, the Roth Syndicate's test inside the city limits of Medicine Hat, is reported drilling at 3,450 feet.

A Montana syndicate is reported to be conducting a preliminary geological reconnoissance of the structure in Southern Alberta between Lethbridge and Magrath, in the Pot Hole Coulee district; and if a favorable structure can be mapped, will probably drill a test for oil this season.

Northern Alberta

In northern Alberta, McMurray Asphaltum & Oil, Ltd. headed by Thomas Draper of Petrolia, is planning to continue operations this season in the Athabaska tar sand district, where a plant has been in operation near McMurray for several years. The company has secured from the Federal Public Works Department at Ottawa a contract for a tar sand pavement in front of the Parliament buildings; and will also build three miles of roadway in Jasper Park, Alberta. The hotels department of the C. N. R. which operates the lodges at Jasper Park has also issued instructions to have all connecting roads and walks paved with the same material. A half mile of tar sand pavement laid at Edmonton last fall has proven so successful that 3,000 tons of tar sand will be used for paving there this summer.

In the Ontario fields, Kiser Brothers have resumed drilling on the E. P. Rowe deep test north of Thamesville, in Zone Township, Kent County. About 100 feet of hole has been made since drilling was resumed at 2,240 feet. Union Natural Gas Co.'s No. 20, deep test in Dover Township, Kent County, is drilling.

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PAINTS VARNISHES ENAMELS LACQUERS

In Norfolk County, Dave Laur is drilling at about 700 feet on a test for the Medina Natural Gas Co. in Houghton Township. Dominion Natural Gas Co. got a flow of about 20,000 feet a day in its latest test in Middleton Township, and will go 100 feet deeper in hope of increasing the production. Contractor Wesner is drilling at about 400 feet on aonther test for the Dominion Natural Gas Co. in Middleton Township.

KANSAS FIELDS

(Continued from Page 42)

No. 1 Molar, NW cor. SW NW, Section 3-23-12. Shaffer and Howell's No. 13, SE cor. NW NW, Section 15-23-13, had sand 1,577-1,639 feet, and made 100 bbls. after a shot of 80 quarts. Mid-Continent Petroleum Corp.'s No. 12, CNL NW, Section 22-23-13, had sand 1,585-1,625 feet, was shot with 80 quarts and made 75 bbls.; a machine is in for No. 4 DeMalhourie, NE cor. SE NE, Section 28-23-13, and No. 2, NW cor. NE NE, Section 28-23-13, is drilling at 475 feet. White Eagle Oil Co.'s No. 2 Clark, SW cor. NW NE, Section 35-25-10, is fishing for tools at 575 feet.

Harwood and Winters and the Mission Oil Co.'s No. 1, SW cor. NE, Section 19-24-11, had sand 1,828-48 feet, and made 27 bbls. after a shot of 60 quarts. Ritchie and Moore have completed No. 1, SW cor. SE, Section 19-24-11. Sand was 1,605-15 feet, and the well was shot with 60 quarts and is making 20 bbls. Prairie Oil & Gas Co.'s No. 1 Gilroy, NE cor. SE SE, Section 12-25-12, is drilling at 975 feet. J. K. Davis is drilling at 775 feet in No. 1 Hinchman, SE cor. NE, Section 17-24-13.

York State Oil Co.'s No. 10, SW cor. NE NW, Section 32-22-11, is drilling at 380 feet. Phillips Petroleum Co.'s No. 7 Hillard, SW cor. NE SW, Section 33-22-11, is drilling at 930 feet. Jennings Brothers have completed No. 8, SW cor. SE, Section 33-22-11. Sand was 1,882-1,925 feet and the well made 50 bbls. after a shot of 125 quarts. York State Oil Co. has spudded in CSL SW NW, Section 33-22-11. T. K. Simmons has completed No. 2, NE cor. NW, Section 4-22-12. Sand was 1,838-85. The well made 225 bbls. after a shot of 220 bbls. No. 3, SW cor. NE NW, Section 4-22-12, had sand 1,867-1,922 feet and made 200 bbls. after a 200-quart shot. Phillips Petroleum Co. has a rig on the ground for No. 1 Jones, SW cor. NW SW, Section 5-22-12. Skelly Oil Co. has spudded No. 1, NE cor. NW, Section 4-23-11. T. K. Simmons has a rig on the ground for No. 1 Molar, NW cor. SW NW, Section 3-23-12.

In the Virgil Pool, Shaffer and Howell's No. 13, SE cor. NW NW, Section 15-23-13, had sand at 1,577-1,639 feet and made 100 bbls. after a shot of 80 quarts. Mid-Continent Petroleum Corp.'s No. 12, CNL NW, Section 22-23-13, had sand at 1,585-1,625 feet, was shot with 80 quarts and made 75 bbls.; a machine is in for No. 4 Dehlinger, NE cor. SE NE, Section 28-23-13. White Eagle Oil Co. is fishing for tools at 500 feet in No. 2 Clark, SW cor. NW NE, Section 35-25-10. Harwood & Winters and the Mission Oil Co. have completed No. 1, SW cor. NE, Section 19-24-11, for 27 bbls. after a shot of 60 quarts in sand at 1,828-48 feet. Ritchie & Moore's No. 1, SW cor. SE, Section 19-24-11, had sand at 1,605-15 feet and made 20 bbls. after a shot of 60 quarts. Prairie Oil & Gas Co. is drilling at 950 feet in No. 1 Gilroy, NE cor. SE SE, Section 12-25-12. J. K. Davis is drilling at 650 feet in No. 1 Hinchman, SE cor. NE, Section 17-24-13.

Flint Ridge and others have spudded No. 2, NW cor. SE SW, Section 23-26-9.

Dixie Oil Co. has completed No. 1, NW cor. NE SW, Section 27-27-7. Sand was 2,730-60 feet and the well made 375 bbls. after a shot of 100 quarts.

Butler County

In the Eldorado district, the Empire Gas & Fuel Co.'s No. 163, SE cor. NW NW, Section 8-25-5, is drilling at 650 feet; and No. 32 Stokes, NW cor. SE SW, Section 28-25-5, is spudded. Sinclair Oil & Gas Co. and the Empire Gas & Fuel Co. have spudded a twin well in No. 15 Skear, NE cor. NE, Section 35-27-4.

Polhamus and others' No. 1, SE cor. SE, Section 9-26-6, is dry and abandoned at 2,808 feet. Sparta Oil Co. has spudded No. 2 Shoenrock, NE cor. SW, Section 32-26-5. Empire Gas & Fuel Co. has the rig up for No. 2 Young, SW cor. SE NW, Section 27-26-7. White Eagle Oil Co. has spudded No. 4, SW cor. NE SW, Section 27-26-7. B. F. Branson is drilling at 2,910 feet in No. 1 Ecker, NE cor. SE NE, Section 5-27-6. Mid-Kansas Oil Co.'s No. 1 Barnhill, SW cor. NW, Section 23-27-7, is rigging up. Amerada Petroleum Corp.'s No. 4, SE cor. SW NE, Section 27-27-7, had sand 2,700-45 feet, was shot with 100 quarts and made 275 bbls. Dixie Oil Co. has spudded No. 2, SW cor. SE SW, Section 27-27-7. Phillips Petroleum Co.'s No. 2, NW cor. SW, Section 27-27-7, had sand 2,707-46 feet, was shot with 120 quarts and made 250 bbls.; No. 4, SW cor. NW SW, Section 27-27-7, had sand 2,707-43 feet, was shot with 117 quarts and swabbed 1,000 bbls. Lewis Oil Co.'s No. 1, NE cor. NW NE, Section 33-27-7, had sand 2,694-2,738 feet, and made 40 bbls. after a shot of 60 quarts.

Dixie Oil Co.'s No. 1, NW cor. NW, Section 27-27-7, is completed for 375 bbls. after a shot of 100 quarts in sand 2,730-60 feet.

Rice County

Yonkers and others have a rig on the ground for No. 2 Walstern, SE cor. NW, Section 2-21-6w; and also for No. 1 Swanson, NW cor. NE NW, Section 11-21-6w. Phillips Petroleum Co. is drilling at 185 feet in No. 1, C SE, Section 9-27-6w.

Russell County

T. C. Johnson has the rig up for No. 7 Kollman, SE cor. SW NE, Section 5-12-15w. Mid West Co.'s No. 15, SW cor. NE NW, Section 8-12-15w, had sand 2,930-3,016 feet, and made 175 bbls. naturally; and No. 18, SW cor. NW NW, Section 8-12-15w, is drilling at 650 feet.

Chautauqua County

J. Brock is drilling at 650 feet in No. 1, NW cor. SE, Section 5-33-9. Mitchell and Frazier have spudded No. 1 Chaffin, NE cor. SE, Section 7-32-11. Watchorn Oil & Gas Co. has the rig up for No. 1 Burlett, NE cor. NW NW, Section 20-34-9.

Cowley County

North of the Trees Pool, the Marland Oil Co. has a dry hole at 3,358 feet in No. 1, SW cor. SE NW, Section 1-31-3.

Trees Oil Co. has a dry hole at 2,787 feet in No. 3, SE cor. Lot 19, Section 6-30-8.

J. A. Hull Co.'s No. 1 State Land, NW cor. SE, Section 15-32-4, has the timbers on the ground. Buckeye Oil Co. has a rig on the ground for No. 8 McFadden, C south half NE SE, Section 25-34-4. Arkansas Fuel Co. has abandoned the rig for No. 3, SW cor. NW, Section 7-32-5. J. A. Hull Co. has completed No. 3, SE cor. SW NW, Section 19-32-5. Sand was 3,026-50 feet, and the well is making 30 bbls. naturally. Duffield and others' No. 2, NW cor. SW SW, Section 19-32-5, had sand 3,027-3,-103 feet, and made 100 bbls. after a shot of 10 quarts. H. W. Hammond has a dry hole in No. 1, NE cor. SE NE, Section 29-32-7, which is abandoned at 3,178 feet. Doric Oil & Gas Co.'s No. 1, NW cor. SE NW, Section 18-33-7, had sand 2,722-31 feet, and was shot with 10 and with 20 quarts and made 10 bbls. daily. Shawver and others have a rig on the ground for No. 1 Shurtz, NE cor. NE, Section 20-34-3. Muddy Oil Co.'s No. 1, NE cor. SE, Section 16-35-4, is dry and abandoned at 3,758 feet.

Sumner County

Phillips Petroleum Co.'s No. 2, SE cor. NE SE, Section 24-33-2, had sand 3,211-34 feet, and made 500 bbls. the first 24 hours. It was not completed.

Elk County

The Elk Petroleum Co. is drilling at 550 feet in No. 6, C NW SE, Section 3-30-9. Conley and others have a failure in No. 1, SE cor. NW, Section 1-30-9, which is dry and abandoned at 2,-311 feet. Sharpless and Denton's No. 1, SW cor. NE, Section 14-30-9, is dry and abandoned at 2,580 feet. Southwestern Gas Co. has rigged up No. 1 Glasscock, NW cor. SE SE, Section 11-31-10. Sooner Gas Co. has a dry hole at 1,285 feet in No. 3, CNL NE SE, Section 15-31-10. Denman and others are rigging up No. 1 Eaton, SW cor. SE SW, Section 36-31-10. Byington and others are drilling at 250 feet in No. 1 Ayers, SE cor. SW, Section 35-31-11.

Coffey County

Bucher and others have spudded No. 1 Jones, SE cor. SE, Section 1-20-14. Peerless Oil Co. is drilling at 1,000 feet in No. 1 Somerhalder, C south half SE, Section 25-22-14.

Chase County

Preston and Pasewalk's No. 1, NE cor. SW, Section 32-18-7, had sand 1,-160-85 feet, with 8,000,000 feet of gas and is not completed. Denton and others have rigged up No. 1 Ray, SW cor. SE, Section 5-21-9.

White Eagle Oil Co. and Connell have a failure at 2,800 feet in No. 1, NW cor. SW, Section 29-22-8. Dingee, Pryor and Lockhard have a rig up for No. 1 Evans, NE cor. NW, Section 14-22-9.

Lyon County

Skow Brothers have a rig up for No. 1, NE cor. NW, Section 28-17-12. S. O. Denten and others have the rig up for No. 1 Brickins, NW cor. NW, Section 20-19-12. Sheedy Oil Co. is drilling at 550 feet in No. 5, NW cor. SE SW, Section 31-21-10, and the rig is up for No. 6, SW cor. NE SW, Section 31-21-10. Ritchie and Moore have built a rig for No. 6 Pixlee, C SE SW, Section 34-21-10. Rhodes and Parkins have built the rig for No. 1 Huntsinger, CEL NE NW SE, Section 31-31-11. Phillips Petroleum Co. has a rig on the ground for No. 1 Hally, CSL NE SW SE, Section 33-21-12; and No. 8, SE cor. SW SW, Section 33-21-12, had sand 1,886-1,912 feet, and made 150 bbls. after a shot of 100 quarts; the rig is on the ground for No. 9 Lauck, SE cor. SW, Section 33-21-12.

OKLAHOMA FIELDS

(Continued from Page 42)

is moving in a rig for No. 1 Reed, SW cor. NW, Section 28-8-9. Kingwood Oil Co. and the Amerada Petroleum Corp. have built the rig for No. 1, NW cor. SE SE, Section 29-8-9.

In the Yeager Field, the Dixie Oil Co.'s No. 4, SW cor. NE SE, Section 18-8-10, had a total depth of 2,823 feet, and was shot at 2,700 feet with 10 quarts and is estimated at 10 bbls.

Phillips Petroleum Co.'s No. 4, NW cor. NE SE, Section 27-9-9, had sand 3,310-11 feet with 15,000,000 feet of gas. Laurel Oil & Gas Co.'s No. 1, SE cor. NW, Section 10-9-10, made 20 bbls. from sand 2,840-60 feet.

Okmulgee District

In the Mounds territory, the Atlas Oil Co. has a rig up for No. 2 Rowe, CNL NE NW, Section 21-16-14. Thompson and Black are drilling at 500 feet in No. 6 Berthell, C SW SW, Section 5-16-13. Delaney and others have a rig up for No. 1-A Bruner, SW cor. NE, Section 34-16-14.

West of Okmulgee, J. C. Smith has completed a gas well in No. 5 Perryman, NW cor. SE SW, Section 22-13-11. Sand was 1,080-96 feet and the well is shut in with 2,000,000 feet of gas; No. 6 Perryman, CNL SE SW, Section 22-13-11, found sand 1,080-94 feet and made 250,-000 feet of gas and 2 bbls. of oil. Wigton & Long have a rig on the ground for No. 4 Hawkins, NW cor. SE SE, Section 29-13-11.

West of Henryetta, the Champlin Refining Co. has a rig on the ground for No. 6 Grayson, NE cor. SE NW, Section 22-11-11. Riverland Oil Co. has built the rig for No. 1 Holmes, NE cor. NW NW, Section 30-11-11.

Near Beggs, C. F. Noble has spudded with a machine in No. 2 Raowls, CNL NW, Section 3-15-11. Iron Mountain Oil Co. has completed No. 2, NW cor. NE NW, Section 3-15-11, for 50 bbls. natural in sand 2,181-93 feet. Evans, Dow and others have spudded No. 1, SW cor. SW Section 20-14-11. Prairie Oil & Gas Co. is drilling at 975 feet in No. 3, SE cor. SW NE, Section 12-14-12. Gray Oil Co. has spudded No. 3, NW cor. NE SE, Section 14-14-12.

Barnsdall Oil Co. has a rig on the ground for No. 3, SW cor. SE, Section 3-12-11. Josey Oil Co. is drilling at 440 feet in No. 12, NE cor. NW SW, Section 33-12-11. Morton Petroleum Co.'s No. 9, CNL NE NW, Section 7-12-12, had sand 2,548-71 feet and made 280 bbls. natural. Champlin Oil Co.'s No. 5 Grayson, NW cor. SE NW, Section 22-11-11, had sand 2,581-90 feet and made 300 bbls. the first 24 hours. M. C. French's No. 3 Summers, SE cor. SW NE, Section 17-11-12, is drilling at 575 feet. F. L. Dunn has a rig up for No. 1 Fish, SW cor. SE NW, Section 18-11-12. Mitchell Oil Co. will drill an old well deeper in No. 1 Goober, SW cor. SE NW, Section 2-10-12. Old total depth was 3,414 feet.

Creek County

Turrell Oil Co. has a dry hole at 1,760 feet in No. 3, SW cor. NW SW, Section 11-17-11. Henry Oil Co.'s No. 3, NW cor. NE NW, Section 36-17-12, is dry and abandoned at 2,430 feet.

In the Mounds region, the Vick Oil Co.'s No. 1, NW cor. NE, Section 12-16-11, is a new rig. Spears and others have a machine in for No. 1, SW cor. SE, Section 5-16-12. Hilt and others' No. 3, CWL NE SE, Section 7-16-12, is dry and abandoned at 2,253 feet. The Carter Oil Co. and Owens' No. 1, NE cor. NE, Section 30-16-12, is dry and abandoned at 2,573 feet.

In the Bristow district, C. G. Tibbens has completed a gas well which will be used for fuel in drilling operations. It is No. 21, CEL NE NE SW, Section 30-15-9, had sand 2,578-2,662 feet, and is shut in with 2,000,000 feet of gas; No. 24 Conetsenny, CNL NW SE, Section 30-15-9, is rigged up; No. 2, CEL SW SW, Section 30-15-9, is completed for 35 bbls. after a shot of 110 quarts in sand 2,283-2,323 feet; a machine is in for No. 2 Louens, NE cor. SW NE, Section 31-15-9.

In the Hall-Donnelly Pool, the Independent Oil & Gas Co. is drilling at 250 feet in No. 1, SW cor. NW, Section 29-24-10.

Buckeye Drilling Co. is drilling at 350 feet in No. 3 Carolina, SW cor. NE NE, Section 1-19-9. Glidden Oil Co. and others' No. 3, SE cor. NE NE, Section 4-19-10, had sand 2,234-58 feet and made 10 bbls. after a shot of 20 quarts. Holmes and others have a gas well in No. 4, CSL SE SW, Section 14-19-10. Sand was 2,290-97 feet and the well is shut in with 12,000,000 feet of gas. Glidden & Holmes have a well in No. 1-A, CEL SE SW, Section 15-19-10. Sand was 2,342-48 feet and the well made 15 bbls. after a shot of 10 quarts.

J. A. Hull Co. has the rig on the ground for No. 2 Walker, NW cor. SE SW, Section 21-18-9. Madden & Madden have a rig on the ground for No. 1 Marshall, SE cor. SW SW, Section 30-18-10. Pennok Oil Co. has a failure in No. 10, CEL NW NW, Section 20-19-11, which is dry and abandoned at 2,383 feet. Regal Oil Co. has rigged up No. 7 Wisey, CSL NW SE SE, Section 36-19-11.

In western Creek County, the Texas & Pacific Coal & Oil Co. has a rig on the ground for No. 7 Horjoche, NE cor. SE, Section 21-17-9. Prairie Oil & Gas Co. has rigged up No. 6 Self, NW cor. SW, Section 22-17-9. O. M. Irlenad and others have a rig on the ground for No. 1 Takoney, SE cor. SW NW, Section 11-17-10. Lilystand and others have a rig on the ground for No. 1-A Smith, a twin well to a dry hole in the SE cor. SW SE, Section 11-17-10. Tidal-Osage Oil Co. has a dry hole at 2,128 feet in No. 4, SW cor. NE NW, Section 19-17-10. J. W. McCulloch has a rig up for No. 1, NW cor. NE, Section 22-17-10. J. H. Wright has a rig up for No. 7 Tah-Kar-Ney, CSL SE NW, Section 24-17-10. H. C. Wilson is drilling an old well deeper in No. 1 Bucktort, SE cor. NW, Section 26-17-10. Old total depth was 2,650 feet. Lewis Emery & Sons are spudded in No. 7, SE cor. NW NE, Section 21-16-8.

Williams & Bell have spudded No. 1, SW cor. NW NE, Section 36-16-9. William Sherry has a rig on the ground for

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No. 1, SE cor. NW NE Section 12-16-10.

Near Sapulpa, S. E. Benson has spudded No. 1-A, NW cor. NE, Section 5-18-12. C. G. Tibbens' No. 8, CSL NE SE NW, Section 9-18-12, had a hole full of water at 2,188 feet and plugged back to the Hominy sand at 2,072-92 feet. The well was shot with 200 quarts and made 15 bbls.

Near Bristow, the Lima Oil Co. has spudded No. 1, SE cor. SW SW, Section 19-15-8. C. G. Tibbens has a failure in No. 1-A, SW cor. SE, Section 1-14-8, at 2,460 feet. Prairie Oil & Gas Co. has rigged up No. 3 White, NE cor. NE, Section 11-14-8.

Tillman County

Blair and O'Donohue are drilling at 1,150 feet in No. 1 Revelle, SW cor. NE SW, Section 11-2s-11w.

Garvin County

Magnolia Petroleum Co.'s No. 9, SW cor. NW, Section 16-1-3w, had sand 1,530-54 feet, and is completed with 11,500,000 feet of gas. Texas & Pacific Coal & Oil Co.'s No. 1, CSL SE SW, Section 16-1-3w, is dry and abandoned at 2,885 feet. Mid-Continent Petroleum Co.'s No. 2, NE cor. NW SE, Section 17-1-3w, is drilling at 850 feet. The Texas Company's No. 11, SE cor. NE, Section 17-1-3w, had sand 1,625-43 feet, and made 55 bbls. naturally; the rig is moved in for No. 12 Deryden, SE cor. SW NE, Section 17-1-3w.

Comanche County

Mid-Kansas Oil Co. has a rig on the ground for No. 1 Venrick, SW cor. NE, Section 21-4-10w.

Jefferson County

Godley Oil Co. and others' No. 1, C NE NW, Section 35-5s-4w, is dry and abandoned at 3,258 feet. Carter Oil Co.'s No. 4, CSL NW NE, Section 33-6s-5w, had sand 1,320-37 feet and swabbed 75 bbls. the first 24 hours. Fain Muse and others' No. 1-A, SW cor. NW, Section 27-6s-6w, is dry at 2,249 feet.

Kiowa County

A. A. Varner has built a standard rig for a wildcat well, No. 1 Bishop, CSL SW NW NW, Section 5-6-18w.

Grady County

Magnolia Petroleum Co. has completed a gas well in No. 4, NE cor. SE SE, Section 23-5-8w. Sand was 2,329-55 feet and the well made 2,000,000 feet of gas and 2 bbls. of oil.

Magnolia Petroleum Co.'s No. 1, SW cor. SE, Section 27-3-5w, had sand 1,505-10 feet, and sandy shale 1,510-13 feet and flowed 30 bbls. the first 24 hours; the rig is moved in for No. 1 Cochran, NE cor. SW SW, Section 27-3-5w. White Eagle Oil Co.'s No. 1, NW cor. NE SW, Section 27-3-5w, is spudded. The Carter Oil Co.'s No. 1, SW cor. NE SW, Section 35-3-5w, had sand 1,489-1,505 feet and made 215 bbls. the first day and is now making 235 bbls., a rotary rig beinb built for No. 3 Lindsay, CSL SW, Section 35-3-5w.

Magnolia Petroleum Co.'s No. 1, C SE NW, Section 14-4-8w, is completed with 28,000,000 feet of gas in sand 1,823-35 feet.

OIL STORAGE IN NEW ZEALAND

WASHINGTON, D. C., Apr. 3.—For the distribution of oils in bulk additional facilities were recently provided in Wellington, New Zealand. A British oil company owning this plant has provided storage facilities for 6,500,000 gallons of gasoline as well as other oils in bulk, according to consular advices. There will be nine storage tanks, with capacities ranging from 100 to 10,000 tons. A can filling plant is also provided to supply local demand. A plant for stamping and making cans with a capacity for 12,000 per day, in addition to a case making works with a capacity for 2,000 per day, are also provided. A similar oil distributing plant is being installed at Auckland by a British company.

S. H. BURT DIES

TOLEDO, Ohio, Apr. 3.—Stanley H. Burt, formerly of Toledo, died at Refugio, Tex., where he had made his home for five years and was engaged in the oil business.

OPERATION OF TORSION BALANCE NOW FAST BECOMING WIDESPREAD

By L. M. Fanning

New York Bureau, The Oil and Gas Journal, 30 Church St., New York

Ninety-one torsion balances are now in operation in the oil fields of the United States, Mexico and South America, according to a survey just completed. Forty-nine are in use in this country. It is estimated that 41 seismographs for the detection of oil structures are being operated in the United States.

The survey shows the Roxana Petroleum Corp. with the largest number of torsion balances, totaling 58, 16 of which are being operated in the Gulf Coast and the remainder scattered in other districts here and abroad. The Roxana owns the instruments it is operating.

The Gulf Production Co. leases and operates nine torsion balances, and the Rycade Oil Corp., which pioneered in the use of the instrument in the Gulf Coast, owns and operates a similar number. The Humphreys Corporation is listed with six and the Humble Oil & Refining Co. with three, both companies owning their instruments. The Marland Oil Co. and The Texas Company lease and operate three and two respectively, and the Atlantic Oil Producing Co. owns and operates one.

Also Have Seismographs

Virtually the same companies are operating seismographs. The Humble Oil & Refining Co., the Union Sulphur Co. and the Gulf Production Co. each are listed with three seismograph crews operating nine seismographs. Marland and Rycade companies each have one crew operating three instruments, although the Rycade crew is possibly operating four instruments. The Atlantic and Humphreys companies each have one crew operating four instruments. All the seismographs are being operated in the Gulf Coast district.

In the case of the Humble and Gulf, each unit or detector makes a separate record, whereas the Atlantic machine operates in such a manner that the results of each unit pass through a central station and one combined record is obtained from the use of the four units.

Oil companies using torsion balances and seismographs are shown as follows:

OIL COMPANIES USING TORSION BALANCES AND SEISMOGRAPHS

Company—	Tors. Bal.	Own. Leas.	No. Crw.	Seis- mo-graphs	Own. Lease.
Atlantic	1	Owned	1	4	Owned operated as 1 crew with 4 units
Gulf	9	Leased	3	9	Leased
Marland	3	Leased	1	3	Leased
Humble	3	Owned	3	9	Owned
Roxana	58	Owned	.	.	
Rycade	9	Owned	1	3	Owned
The Texas Co.	2	Leased	.	.	
Union Sulphur Co	.	.	3	9	Leased
Humphreys Corp.	6	Owned	1	4	Leased

The Atlantic, Marland, Humble, Rycade, and The Texas Companies are operating torsion balances exclusively in the Gulf Coast district and four of the six instruments of the Humphreys Corporation are also operated in this district. The total number in the Gulf Coast is 29 instruments. The nine torsion balances being used by the Gulf are in North Texas, Oklahoma and Kansas on structure work. The nine instruments owned by the Rycade are in use in west Texas and New Mexico on structure work and two of Humphreys' instruments are in West Texas.

The following table shows the number and location of torsion balances in operation:

NUMBER OF TORSION BALANCES AND LOCATIONS

Co.—	Total Inst.	No. G.C.	Other Loca.	No.
Atlantic	1	1		
Gulf	9	.	N.Tex.&Okla.	9
Marland	3	3		
Humble	3	3		
Roxana	58	16	Mexico and S.A.	42
Rycade	9	.	N.Mex.& N.Tex.	9
The Texas Co.	2	2		
Humpherys	6	4	West Texas	2
Total	91	29		62

Commercial companies leasing torsion balances and seismographs are shown as follows:

COMMERCIAL COMPANIES LEASING TORSION BALANCES AND SEISMOGRAPHS

Co.—	Torsion Balance	Seismo-graph
N. A. Exploration Co.	21	5
Schumacher	2	.
Baron Mintrop	.	25
Dr. Steiner	2	.
A. Deussen	.	1

The Rycade Oil Corp. was the first company to bring the use of the geophysical instrument to the Gulf Coast district of Texas. In October, 1922, the company used a torsion balance on the Spindletop Dome in Jefferson County. In December of the same year, the Roxana put one of these instruments in operation. The United States Coast and Geodetic Survey made some gravity observations at Damon Mound in 1923 with a pendulum apparatus.

In March, 1924, the Marland Oil Co. placed the first seismograph on the Gulf Coast and the Gulf Production Co. followed with one in May. In June, 1924, the Gulf Production Co. began operations with a torsion balance. The Atlantic Oil Producing Co., The Texas Company, and others placed machines in operation after experimentation with several types of instruments involving various principles.

CALIFORNIA RECEIPTS AND PETROLEUM IMPORTS

Imports of crude and refined oils at the principal United States ports for the week ended March 27 totaled 2,352,000 bbls., a daily average of 264,179 bbls., compared with 1,566,000 bbls., a daily average of 223,714 bbls. for the week ended March 20, and a daily average of 264,179 bbls. for the four weeks ended March 27.

At Atlantic Coast Ports—	
Baltimore	228,000
Boston	286,000
New York	722,000
Philadelphia	125,000
Others	351,000
Total	1,712,000
Daily average	244,571
At Gulf Coast Ports—	
Galveston district	183,000
New Orleans and Baton Rouge	392,000
Port Arthur and Sabine district	25,000
Tampa	40,000
Total	640,000
Daily average	91,429
At All United States Ports—	
Total	2,352,000
Daily average	336,000
Daily average four weeks ended	264,179

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended March 27 totaled 743,000 bbls., a daily average of 106,143 bbls., against 671,000 bbls., a daily average of 95,857 bbls., for the week ended March 20, and a daily average of 89,036 bbls. for the four weeks ended March 27.

At Atlantic Coast Ports—	
Baltimore	50,000
New York	328,000
Philadelphia	215,000
Others	150,000
Total	743,000
Daily average	106,143
At Gulf Coast Ports—None.	
Total Atlantic and Gulf Coast ports	743,000
Daily average	106,143
Daily average four weeks ended	89,036

TAX DECISION

WASHINGTON, D. C., Apr. 3.—The United States Board of Tax Appeals in the case of the appeal of Strong, Hewat & Co., Inc., of New York has decided, that in the reorganization of a business, Section 331 of the Revenue Act of 1918, prevents the corporation from valuing the assets so acquired at a greater amount in computing invested capital than that at which the partnership could have valued them, in computing invested capital, if they had not been so transferred.

TO LAY IRAK PIPELINE

Anglo-Persian Oil Co. has arranged with the Irak Government for the laying of a pipe line across Irak, following the automobile and air mail route from Bagdad to Amman, and the erection of refineries.

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Sole Manufacturers of the Simplex Jacks
Chicago, Ill., U.S.A.

Simplex Jacks are sold by the supply houses that are leaders in every oil field.

GULF COAST

(Continued from Page 56)

View Oil Co.'s No. 47 Hardin is shut down at 1,410 feet.

Harris County Pools

In the Pierce Junction Pool, the Rio Bravo Oil Co.'s No. 2-P Settegast is heading 250 bbls. per day. The Navarro Oil Co.'s No. 2 Cain has derrick down at 2,370 feet. The derrick is down over the Gulf company's No. 13 Taylor, a drilling well.

In the Goose Creek Pool, the Humble Oil & Refining Co.'s No. 67 Smith is at 2,335 fee tand No. 68 at 2,890 feet. No. 9 is working over. The Gulf Production Co.'s No. 8 State land is working over. No. 12 Gallaird fee is at 3,675 feet. No. 21 Beaumont is around 3,600 feet. No. 5 Hirsch is at 2,970 feet. No. 11 Chapman-Bryan is deepening at 4,375 feet. The Sun Oil Co.'s No. 18 Bartlett-Smith is at 2,354 feet. The M. & B. Oil Co.'s No. 4 Scorrgea is at 2,325 feet and the Powell Oil Co. is cutting the liner in No. 6 Bryan at 4,510 feet.

Fort Bend County Pools

At Blue Ridge the Gulf Refining Co.'s No. 6 Luscher is at 3,780 feet and The Texas Company's No. 10 Robinson is at 3,510 feet.

At Nash Dome, the Rycade Petroleum Co.'s No. 6 Nash is drilling around 2,610 feet and No. 7 Nash is at 2,415 feet. No. 2 Flessner set 9-inch casing at 3,110 feet and No. 3 Flessner is drilling around 150 feet.

At Orchard, the Gulf Production Co.'s No. 6 Moore is drilling around 2,000 feet.

At West Columbia in Brazoria County, The Texas Company's No. 22 Arnold is deepening around 3,655 feet and Hyde Production Co.'s No. 1 H. Masterson is at 3,345 feet and the Humble Oil & Refining Co.'s No. 1 Le Rubus is drilling deeper at 3,855 feet after bailing salt water.

Other Pools

At High Island, Galveston County, the Gulf Production Co. set screen to bail No. 2 Smith. No. 5 Smith is drilling around 1,600 feet. The Sun Oil Co.'s No. 6-C Cade is pumping 85 bbls. No. 80-C Cade is at 2,315 feet and No. 10 Cade at 300 feet. A location has been made for No. 7.

On the southeast side of the Spindletop Pool, the Yount-Lee Oil Co.'s No. 4 McFaddin is around 3,455 feet and No. 2 Gladys on the north side is at 2,800 feet. The Gulf Production Co.'s No. 222 Gladys is at 765 feet and the Lillian Oil Co.'s No. 3 Terrell is around 975 feet.

The Rycade Petroleum Co.'s No. 1 Kountz on the north side of the Markham Pool. Mills Bennett is starting No. 7 Japhet on the southwest side of the dome at Barber Hill in Chambers County. Also No. 7 Barrow.

South Louisiana

In the Edgerly Pool, the Green Oil Co.'s No. 7 Moore is rigging up to start. The Gulf Refining Co.'s No. 24 Bright-Penn is around 3,080 feet.

In the Lockport district, the Vacuum-Gulf companies' No. 5 Miller is at 4,595 feet. No. 7 Miller is at 3,200 feet and No. 8 around 3,235 feet, with No. 9 below 3,800 feet. No. 3 Farquhar is at 2,765 feet. No. 1 Friedberg & Wolf is rigging to drill deeper and a derrick is standing for No. 4 Lock-Moore.

In St. Mary's Parish, the Rio Bravo Oil Co.'s No. 1 Glenwild is still fishing.

In St. Mary's Parish the Rycade Petroleum Co.'s No. 1 Glenwild is idle waiting for fuel oil.

In Calcasieu Parish, the Gulf Refining Co. of Louisiana abandoned No. 2 Lutcher-Moore on the new dome, north of Vinton, at 2,500 feet. The Union Sulphur Co. is starting No. 2 McCoy, a sulphur test.

The Toro Petroleum Co. abandoned No. 1 Pickering in Sabine Parish at 1,548 feet. Emlet and others' No. 5 Hicks is around 3,300 feet with No. 7 Bowman rigging.

Texas Coastal Wildcats

In Chambers County, W. C. Moore's No. 1 Drought is idle. Young and others on the Wallisville road, derrick down.

In Brazoria County, the Roxana Petroleum Corp.'s No. 1 Kropp is shut down. The same company is drilling No. 2 Allen and No. 1 Clements State prison farm.

In Fort Bend County, Gulf Production Co.'s No. 8 Davis, between Big Creek and Damon Mound, is around 3,650 feet and No. 10 Davis is at 565 feet. Neilan, Inc., No. 2 Fredericks is idle, with casing set to drill in.

In Grimes County, Briant & Huber's No. 1 near Piedmont is around 1,500 feet. A location has been made for a test near Carlos.

In Harris County, Brane Oil Co. is starting No. 1 north of Spring on a lease covering 2,000 acres. At Hockley Dome, The Texas Company's No. 6 Warren is around 3,310 feet. and No. 7 is at 1,710 feet. The West Production Co. is starting No. 9 House on the north side of the San Jacinto River on the north side of the Humble Pool. J. Varnell is rigging Nos. 1 and 2 fee. Geophysical tests are being made north of Clear Lake.

In Jefferson County, the Gulf Production Co.'s No. 1 Burrell, Fannette Dome, is around 3,650 feet and No. 2 Bordages is below 865 feet. The dome is west and south of Beaumont. At Big Hill Dome, the Houston Oil Co.'s No. 1 Sun-Dyson is below 3,125 feet.

In Liberty County, the Gulf Production Co. lost two derricks south of Devers. D. J. Harrison is starting No. 2 Schlender on the southwest side of the old North Dayton Pool. The Premium Oil Co. is rigging No. 1 Mitchell, north of the South Liberty Pool.

In Matagorda County, Gulf Production Co.'s No. 4 Craig off the Hawkins Dome, is drilling around 565 feet. A derrick is up for No. 1 Sanborn. The Shepherd Mound Oil Co.'s No. 2 Hawkins is at 3,005 feet.

In Orange County, geophysical tests are being made around Benner Dome, across the Neches River 3 miles east of Beaumont.

In Sabine County, the Crater Oil Co.'s No. 1 American Lumber Co. is rigged.

In Wharton County, the Houston-Gulf Gas Co.'s No. 1 Woodbine is at 685 feet. J. W. Rich's No. 1 Brown is idle at 1,050 feet. No. 2 Dennis is around 200 feet. SoRelle's No. 1 fee is rigging on the Glen Flora road. The Gulf Production Co.'s No. 1 Borden near Mackay is at 4,030 feet.

In Washington County, Hancock & Pruitt are starting three deep tests on the Posey land, 5 miles east of Brenham. The section southwest of Brenham which was the scene of much activity 10 years ago, has five shallow sand wells averaging 100 bbls. per day from sands at 700-800 feet and one well at 1,370 feet pumping 10 bbls. per day. A peculiar feature of the district is that the wells pumping from the shallow depths produce crude of asphaltic base and the one from the deeper sand is paraffin base. The test north of Burton is idle.

In Waller County, A. L. Maxwell is drilling a test 7 miles north of the town of Waller. George Newman has a location for No. 2 near Pattison.

RUSSIA WANTS DIESELS

NEW YORK, Apr. 3.—The Soviet Government is planning to place American Diesel locomotives on its railways, its was said at the offices of the Amtorg Trading Corp., the Soviet's purchasing agency here, in connection with the statement by Samuel Vauclain, president of the Baldwin Locomotive Works, that he would sail this month to discuss with Soviet officials the use of American railroad equipment in Russia. The Soviet Government has experimented with two Diesel engines. One was built in Germany and another in Russia.

OPENS SAN ANGELO OFFICE

The Marland Oil Co. has established a district office in San Angelo, Tex., that is headquarters for a territory covering 50 counties. Thirty geologists are working out of the office and six scouts and six lease men. Formerly that territory was covered out of the Marland San Antonio office.

Wrightsman Believes Future Problems Safe In Hands of Industry

C. J. Wrightsman, president of the Wrightsman Oil Corp. is a confirmed optimist on the future of the petroleum industry. He delivered an address on that subject before a night school devoted to the study of the oil business and its problems, in Tulsa High School last Thursday evening.

Mr. Wrightsman told his audience that to him the future of petroleum was limitless in scope. He went back to the days, not long gone, when the only thought of the refining industry was of kerosene and lubricants; when gasoline was a nuisance which had to be disposed of and men did not dream of burning oil as fuel if there was anything else to burn. He reviewed the changes wrought by the constantly increasing demands upon the industry which gave the chemist, the engineer and the geologist his opportunity. "Today," said the speaker, "we are thrilled with the knowledge of a thousand by-products with a range varying from synthetic alcohol to synthetic meat and valuable food products, taking in synthetic leather and rubber, candy, acids, and potable drinks—a marvelous realization! In the breaking up, through recent chemical processes, of solids and matter into most minute atom separation, we find ourselves only at the threshold of an epoch in petroleum which will give us countless diversified products outside of gasoline and distillates. The conversion of some parts of the structure of petroleum into food products in commercial quantity is not beyond man's imagination."

The speaker expressed the opinion that the more the oil business expands and the more necessary it makes itself in the everyday life of the civilized human race, the stronger it becomes entrenched. He had no patience for those who talked of the exhaustion of our oil resources. He expressed his belief in the results of deeper drilling. He has not yet been shown, he said, why it is not feasible to drill 10,000 feet for oil, or why oil cannot be found at that depth in some localities. The science of drilling already had improved to such an extent that it is easier to drill 6,000 feet now than it was 2,500 a score of years ago.

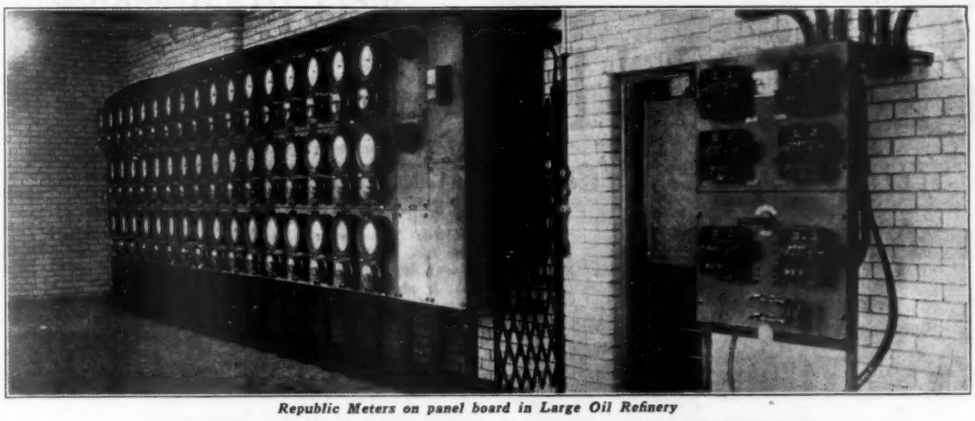
"In every crisis in the life of industry where it was called upon to increase the production, of crude oil, or to increase the products of oil, the skill and inventive genius within the industry has met every requirement. There is no reason to think that the future will be any different in this respect than the past. The petroleum industry is moving forward scientificially every day. It does not hesitate to scrap old methods and adopt the new and the better.

Later Mr. Wrightsman expressed himself in opposition to what he considered wasteful expenditure in ornate and expensive filling stations and the superservice given the motor public by the marketing branch of the industry. "I don't need a valet when I want my tank filled with gas, nor does the gasoline seem any better to me when served from a $100,000 filling station," he said.

On the question of the Government relations with the oil industry, Mr. Wrightsman said the Government could do the oil industry a real service and at the same time build up an oil reserve by buying its oil in time of over production and storing it in large quantity against the time the navy might have immediate need of it.

PROTEST RATE ON SUPPLIES

WASHINGTON, D. C., Apr. 3.—The Louisiana Iron & Supply Co., of Shreveport, La., and El Dorado, Ark., has filed a complaint against the Atchison, Topeka & Santa Fe Railroad and others charging that rates on second-hand oil well supplies from points in Kansas and Oklahoma to Shreveport, El Dorado and Norphlet, on a commodity basis of 61 cents are unjust and unreasonable.



Republic Meters on panel board in Large Oil Refinery

REPUBLICS SAVE STEAM IN OIL REFINING

BY THE SUPERINTENDENT OF A LARGE OIL REFINERY:—

"The cost of steam is one of the largest items entering into the distillation of petroleum products; therefore, to know the cost of each product it is essential to measure the steam used. Republic Flow Meters enable us to do this accurately.

"When our new power house was completed, 49 Republic Flow Meters were installed. Of these 6 are indicating meters in the power house, one on each of the four boilers, one for steam consumed by the boiler house auxiliaries, and one measuring the feedwater.

"The other 43 are distribution meters, which measure the steam flow to the crude oil stills, pressure stills, re-run still, cracking coils, steam stills, batch stills, etc.

"All the 49 meters are mounted on an instrument board in the power house instrument room, although in some cases the points at which the steam is measured are from one-half to three-quarters of a mile away. This is possible because of the electrical operation of the Republic Meters.

"A few portable flow meters of other makes were in use for making steam studies at different points.

"The flow meters used on our 4 boilers enable us to get the maximum result from the boilers. They show exactly what each boiler is doing; and by watching the indicating meters it is possible to divide the load properly among all the boilers in use.

"We figure that our point of maximum efficiency is reached when the boilers are operating 255% of capacity. Recently we were making a coal test, using one boiler, the flow meter chart showed that this 255% of capacity point was held very closely for a period of 24 hours. This would not have been possible without a flow meter.

"By enabling us to run our boilers at their most economical rating, the flow meters are certain to save us money in our steam production. The information which we shall get through accurate tests of fuels and other factors will bring about additional economies in the generation of steam.

"The greatest value of the flow meters, however, lies in measuring our steam distribution. We have always known accurately what it cost to produce our steam; but until we put in the flow meters we did not know how much steam to charge against each department."

Write for Bulletin "STEAM ECONOMY"

Republic Flow Meters Co.
CHICAGO

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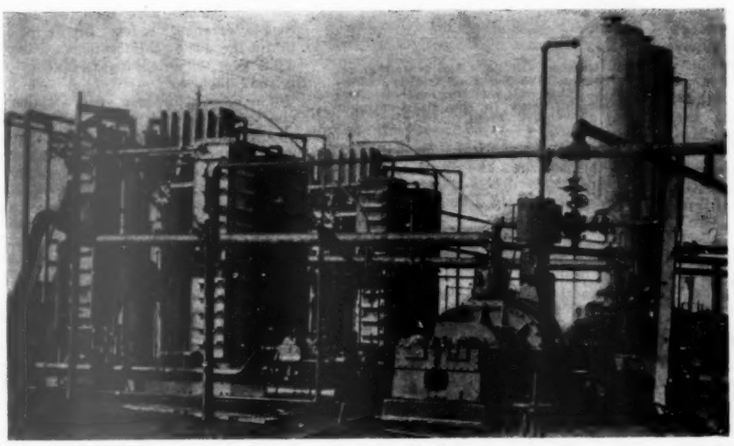
SOUTHWESTERN GASOLINE PLANTS



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The value of the following outstanding features is clearly apparent to experienced operators:

1. *Portable; meets all transportation requirements in weights and clearance.*
2. *Salvage value, almost 100%.*
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6. *Flexible; affords (a) increased capacity by adding parallel units, and (b) economic decreased capacity by removing units as gas volumes recede.*
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9. *Easily controlled and operated; one man handles several units.*
10. *Operates as efficiently as any stationary plant.*

Our catalog contains data of operating results; in addition, we shall be pleased to send you details of showings of plants in your vicinity.

SOUTHWESTERN ENGINEERING CORP.
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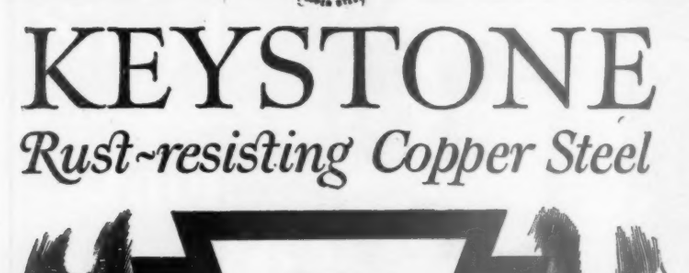
Rust-resisting Copper Steel



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Ask your manufacturer to supply you tanks made of Keystone quality. It is an alloy made by the addition of a certain percentage of Copper to well-made Steel, thereby greatly increasing its lasting qualities under actual service conditions. Keystone is unexcelled for roofing, siding and construction purposes, as well as for culverts, flumes, tanks, barrels, and all oil country uses. Sold by leading metal merchants.

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Keystone quality is used by leading tank and barrel manufacturers.

Prominent septic tank and vault makers use Keystone for greater durability.

Successful engineers, contractors, and builders use Keystone for greater rust-resistance.

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Keystone demonstrated its excellence in the service tests of the American Society for Testing Materials.

Users everywhere favor Keystone for purposes demanding reliability and lasting service. Send for booklets.

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Recognized as the standard of quality since 1864. APOLLO-KEYSTONE Galvanized Sheets with the copper steel alloy base are unequaled for Culverts, Flumes, Silos, Roofing, Siding, Spouting, Gutters, Cornices and all forms of exposed sheet metal work demanding superior rust resistance. Write for Apollo booklet.

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MID-CONTINENT'S DEEPEST ROTARY WELL HAS INTERESTING FEATURES

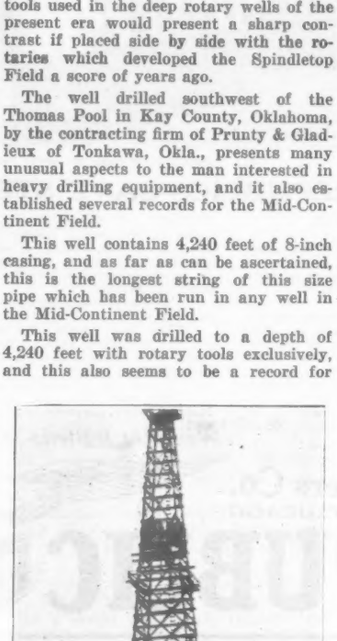
By J. L. Dwyer

Changed conditions may not necessitate new principles, but they do demand a revision of method, and in the science of deep well drilling this is forcefully illustrated. The same principles which were used 20 years ago are employed today, but the deeper penetration has demanded a more rugged strength in the equipment used, and a natural increase in size has resulted. The elevators, casing and other tools used in the deep rotary wells of the present era would present a sharp contrast if placed side by side with the rotaries which developed the Spindletop Field a score of years ago.

The well drilled southwest of the Thomas Pool in Kay County, Oklahoma, by the contracting firm of Prunty & Gladieux of Tonkawa, Okla., presents many unusual aspects to the man interested in heavy drilling equipment, and it also established several records for the Mid-Continent Field.

This well contains 4,240 feet of 8-inch casing, and as far as can be ascertained, this is the longest string of this size pipe which has been run in any well in the Mid-Continent Field.

This well was drilled to a depth of 4,240 feet with rotary tools exclusively, and this also seems to be a record for the Mid-Continent Field. In drilling the 4,400-foot horizons, the rotaries have been used only to a depth of 3,800 feet and the holes have been standardized at that point.



The Marland Oil Co.'s No. 1 Stephenson in Section 6-24-2w, Kay County, Oklahoma. This well has the longest string of 8-inch casing in the Mid-Continent Field.

Long Run of Rock Bits

After a depth of 2,200 feet was reached in this well, the fishtail bits were never run into the hole, and the remainder of the depth was drilled with Hughes rock bits. This is believed to be the longest run of rock-bit hole ever made in this region.

The well is the property of the Marland Oil Co., and in awarding the drilling contract the depth specified was 4,700 feet.

The well was spudded in November 25, 1925, and the 8-inch casing was landed March 7, 1926. It was cemented by the Halliburton Oil Well Cementing Co. and 1,200 bags of cement were used in setting the pipe and assuring a good shutoff.

The well is No. 1 Stephenson, NW cor. NE, Section 6-24-2w, 4 miles southwest of the Thomas Pool. It is situated on level prairie land, and when started coal was used as fuel for the boilers. This was changed to gas after a line had been laid from the Thomas Pool. In actual drilling time, 102 days were required to reach the present depth.

Twenty-two days were lost, 8 days in fishing and 14 days as a result of water shortage and repairs to the rig. Two fishing jobs were encountered.

A Roebling line was used to drill the well, and the contractors expect to use the same line on one more well. The line was run four times through the traveling and crown block (this process is generally termed using four lines) at the start, and at a depth of 2,300 feet this arrangement was changed to six lines. At a depth of 3,790 feet the line was again changed and after that depth eight lines were used in handling the drill pipe and casing.

The rig, the line, the blocks and all the equipment which aided in sustaining the weight of the casing, and the engine which had the necessary power to handle this weight were compelled to handle a load of more than 67 tons when the entire string of casing was run.

Possibly the most interesting phase of the operation is the terrific strain to which the casing was subjected, and the enormous pressure. In the long string of 8-inch, 32-pound National Tube seamless DBX pipe was used. This casing was handled by Bovaird elevators. The collapsing pressure of this casing is 2,151 pounds to the square inch, and using a safety factor of one, a string of 5,162 feet of this pipe could be run. A safety factor of two (the general factor used in pipe culculations) limits the use of this casing to a depth of 2,581 feet. The safety factor is interesting. In other types of construction, a much larger safety factor is employed, for instance, in bridge construction, a safety factor of 20 is generally used.

Considering the tensile strength of the pipe, a safety factor of approximately two and three-quarters was used. The tensile strength of this pipe with a safety factor of two is 5,906 feet. That means that considering only the ability of the pipe to support its own weight upon its own threads and its own collars, it may be used to a depth of 5,906 feet using this factor. This manner of figuring takes no account of the lateral pressure to which the pipe is subjected, and the man in the field may consider it as representing the total weight which the bottom joint is capable of supporting without damage to the string of pipe. A tensile strength safety factor of three limits the use of this casing to a depth of 3,937 feet. The thickness of this casing is .352 inches.

The casing was run with a Baker float one joint from the bottom, and was practically floated into the hole. The average length of the joints were 26 feet, the thread was 10 to the inch.

The drill pipe was handled with Wilson elevators. The drill string contained 3,000 feet of regular 22-pound drill pipe on the bottom of the string, with 1,000 feet of heavy 32-pound drill pipe at the top.

Two 100-horse power boilers were set when the well was started. When the water supply became imperfect, they were supplemented with one 73-horse power boiler.

The engine used to drill this well was the new Ajax enclosed 12 by 12 twin cylinder, which handled the enormous load perfectly. There have only been two of these engines made to date, and this is the first time this type engine has appeared in oil field work.

The new type Ideal slush pumps used on this well are gigantic. With a rated capacity of 150 gallons per minute at 100 per cent efficiency it is estimated that during the drilling of this well the pumps worked at 79 per cent efficiency. With a water pressure of 675 pounds, and a steam pressure of 180 pounds from the boilers, the rapid pickup and discharge of the slush used in rotary drilling is almost similar to a sand blast, and the

gruelling service to which the interior of the pump is subjected by the mud-laden fluid demands an unusually high standard of material. The pump was designed for service up to 1,200 pounds water pressure.

The well is now rigged with standard tools which will drill it to the contract depth of 4,700 feet unless pay sand be encountered, and the progress of the cable tools will be watched with interest. The well may become one of the deepest in the state, and the Marland Oil Co. has signified its intention to drill as deep as possible if nothing be found. It may at least become an interesting chapter in the present day inquiry, "How deep can we drill and why?"

ABANDON COLD BAY; TO DRILL AT KANATAK

SEWARD, Alaska, Apr. 3.—The Standard Oil Co. of California has ceased drilling operations in the Cold Bay region, on the southern shore of the Alaskan Peninsula, west of Kodiak. Instructions were sent from San Francisco to tear down all the buildings of the company on Cold Bay and move its equipment to Kanatak, 50 miles south.

Drilling operations were halted when 550 feet of casing were lost in a cave-in after a depth of 5,035 feet had been reached. The company had been drilling for three years. It is expected it will take four months to move to Kanatak. It was reported oil had been struck at Kanatak less than 1,500 feet deep.

The company sent its first workmen to the region three years ago to a spot 17 miles inland from Kanatak. They had to break a road from the Cold Bay port and then bring in their supplies by way of Seward to the eastward. The route called for a man-made pass through two mountain ranges and a number of tremendously difficult creek fords.

In the first year working in blizzards and hurricanes, the 20 men fought to punch through 1,600 feet of sandstone. Sometimes they only made a foot a day and it took a year to penetrate the layer. It took two years more to get the single hole down to 5,034 feet and there was not a trace of oil. The gang boxed up its gear and "pulled out," using its tractor for the last trek over the road to Kanatak which nature blotted out behind them with tremendous snowdrifts.

TEXAS COMPANY CHANGES

B. E. Hull has succeeded J. H. Hill as vice president of the Texas Pipe Line Co. of Oklahoma and taken the place of J. R. Ramsey as director in that company. Mr. Hull has also succeeded R. A. John as president of the Texas Pipe Line Co., taking the place of E. H. Catlin as director in that corporation.

D. J. Moran has succeeded Mr. Hull as vice president of The Texas Company of Mexico. J. H. Hall has taken the place of E. C. Lufkin as a director of that company and P. J. Ryan has succeeded Wilson Fisher as a director.

P. C. Scullin has been appointed manager of the refinery department of The Texas Company and F. P. Manley sales manager of the southern division, succeeding the late C. P. Dodge. H. R. Gates has been transferred from Houston to New York in charge of statistical work.

RECEIPTS OF PETROLEUM IN MARCH ESTABLISHED A NEW HIGH RECORD

By N. O. Fanning

New York Bureau, The Oil and Gas Journal, 30 Church St., New York

NEW YORK, Apr. 3.—March receipts of crude and refined oil at Atlantic Coast ports established a high record of 18,435,000 bbls. The daily average was also a record, being 594,700 bbls. The largest previous monthly receipts were those for July, 1925, amounting to 17,404,000 bbls., a daily average of 561,000 bbls. Receipts for June, 1924, were the third largest, amounting to 17,336,000 bbls. The daily average for that month, 577,000 bbls., was the largest previous to the March average of this year.

The March receipts for this year compare with 14,744,000 bbls. in February, and with 15,185,000 bbls. in March, 1925.

Total estimated receipts for the first quarter of 1926 were 46,627,000 bbls., as compared with 44,233,000 bbls. for the first quarter of 1925 and 39,900,000 bbls. in the corresponding quarter of 1924.

Receipts from the Gulf Coast in the first quarter of this year totaled 27,763,000 bbls. against 25,488,000 bbls. in the 1925 quarter and only 15,916,000 bbls. in the first quarter of 1924.

Receipts from the Pacific Coast during the first quarter of 1926 are estimated at 6,891,000 bbls. This compares with 6,314,000 bbls. in the same quarter of 1925, and 14,304,000 bbls. in the first three months of 1924.

Imports from Mexico in the first three months of 1926 were 9,652,000 bbls., against 11,358,000 bbls. in the first quarter of 1925 and 9,390,000 bbls. in the first quarter of 1924.

Imports from other than Mexico—Peru, Venezuela and Trinidad combined—for the first three months of 1925 reached the record total of 2,321,000 bbls., compared with 1,073,000 bbls. in the first quarter of 1925 and with only 290,000 bbls. in the first quarter of 1924.

March receipts of crude and refined oil at Atlantic Coast ports compare with those for February, 1926, and March, 1925, as follows (in barrels):

	March, 1926	February, 1926	March, 1925
Baton Rouge and New Orleans	1,868,000	2,078,000	1,527,000
Port Arthur, Sabine, Beaumont	5,277,000	3,882,000	3,257,000
Texas City, Houston and Galveston	2,735,000	3,302,000	3,740,000
Gulf Coast	9,880,000	9,262,000	8,524,000
Pacific Coast	3,021,000	2,015,000	2,505,000
Mexico	4,720,000	2,933,000	3,866,000
South America	814,000	534,000	290,000
Total	18,435,000	14,744,000	15,185,000

Increased receipts during March, 1926, from the Port Arthur district was one of the outstanding features, gains being recorded principally by Gulf Refining, The Texas Company, Atlantic Refining and Standard Oil Co. of New York. Another feature of March was the gain in Imports from Mexico.

Comparison of receipts at Atlantic ports from various sources by months for the first quarter of the last three years follow (in barrels):

Source—	First Quarter 1926	1925	1924
Gulf Coast:			
March	9,880,000	8,254,000	6,271,000
February	9,262,000	7,307,000	5,066,000
January	8,621,000	9,657,000	4,579,000
Total	27,763,000	25,488,000	15,916,000
Pacific Coast:			
March	3,021,000	2,505,000	4,255,000
February	2,016,000	1,445,000	5,111,000
January	1,855,000	2,364,000	4,938,000
Total	6,891,000	6,314,000	14,304,000
Mexico:			
March	4,720,000	3,866,000	3,769,000
February	2,933,000	3,636,000	3,153,000
January	1,999,000	3,856,000	2,468,000
Total	9,652,000	11,358,000	9,390,000
South America:			
March	814,000	324,000	290,000
February	534,000	475,000	.....
January	973,000	271,000	.....
Total	2,321,000	1,073,000	290,000
Totals:			
March	18,435,000	15,219,000	14,585,000
February	14,744,000	12,866,000	13,330,000
January	13,448,000	16,148,000	11,985,000
Total	46,627,000	44,233,000	39,900,000

The large receipts in March are looked upon in many quarters as signifying increased consumption on the Atlantic Seaboard. It is said that some of the increase is due to larger shipments of gasoline in bulk to the Atlantic Seaboard from the Gulf Coast and California. Some bulk gasoline shipments were also received in March of this year from Trinidad.

"PREPAREDNESS"

Against Evaporation

With hot weather coming, evaporation losses will be heavy unless your tanks are of vapor-tight construction. Prepare against these losses by installing MALONEY Tanks, rendered by the Maloney patented "crimp" at seams and joints and by Maloney standards of design and workmanship, absolutely vapor-tight throughout. The illustration shows a battery of new MALONEY Tanks in the Thomas Pool, Oklahoma.

"Alone in Quality"

MALONEY TANK MFG. COMPANY

Tulsa, Okla.

Distributors at All Principal Petroleum Points

12 to 3,000 Bbls. Capacity

Packed in Steel-Bound Crates for Export

"Buck" Type Vacuum-Pressure Valves and Vacuum Breakers Furnished

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MADE OF KEYSTONE COPPER STEEL

MALONEY ALONE

35 CENTS a line first insertion; 25c a line each additional insertion. Cash in advance.

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170,000-ACRE BLOCK potential oil and cotton land. Fee $5.00 per acre. South Artesia, New Mex. region, across the line in Texas. U. S. Geological Survey reports Lower Permian Exposure, shallow Pennsylvanian. Dome structure. Texas Bureau Economic Geology reports 1,000 feet oil shales underlying, two horizons 1,800 and 3,400 feet. For sale due to age of owner. P. O. Box 625, Dallas, Tex.

NEW MEXICO — 20,000 acres San Juan and Rio Arriba Counties, Government perits. Want drilling in contracts with reliable companies. Percentage basis. Good terms. Shallow drilling. Oil 66 Baume, 84 per cent gasoline. Proven structure. Four sands. Approved by high-class geologists. Write us for particulars. International Development Co., 1006 Patterson Bldg., Denver, Colo.

THE SMALL SUM that it costs to insert an advertisement in the Classified Section of The Oil and Gas Journal enables you to place your desires in the minds of men who are always interested in a good proposition.

HAVE SEVERAL pieces of flush and settled production for sale in Oklahoma and Wichita Falls districts. Prices reasonable and terms can be arranged if necessary. P. O. Box 1144, Dallas, Tex.

800 ACRES in Warren County for an offset well, about 2 miles from production. One well drilling on opposite side of block about 1½ miles away. Two sands about 600 and 1,200 feet deep. Full details furnished responsible parties on request. R. E. Cope, Bowling Green, Ky.

NEW OIL DEVELOPMENT

In Texas County, Oklahoma, one gas well, six wells now driling. This is said to be the biggest wildcat in the state. The eyes of the world are on the Panhandle of Oklahoma and Texas. Send 25 cents for map showing locations of blocks, wells, checkerboarding. Oil leases and royalties for sale.

THE GUYMON LAND & LOAN CO.
Guymon, Okla.

SMALL PRODUCING property for sale in the Preston Field, Okmulgee, Okla. Address S., 214 Harrison Building, Philadelphia, Pa.

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Complete operating refinery in the heart of Mid-Continent Field with pipe line to high gravity oil field. Well located and good railroad facilities. Capacity 2,500 bbls. For complete information, write Box B-230, The Oil and Gas Journal, Tulsa, Okla.

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GEOLOGIST and exploration engineer wants job where technique and practical application of Eotvos torsion balance may be acquired. University graduate. Box B-242, The Oil and Gas Journal, Tulsa, Okla.

MARRIED MAN 30 years old with 12 years of petroleum marketing, jobbing and refining experience. Can furnish good references as to sales, executive and refining knowledge. Prefer proving worth before definite salary is arranged. Will go to foreign countries if necessary. For further communication address Box B-240, The Oil and Gas Journal, Tulsa, Okla

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EXPERIENCED lease man desires position with reliable company. A-1 reference. Box B-223, The Oil and Gas Journal, Tulsa, Okla.

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HELP WANTED

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Tulsa, Okla.

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For an Oil Field Salesman

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AMERICAN ENGINEERS Service, Pittsburgh, Pa. Require for Eeastern-Western-Southern employment proposals; construction, designing engineers, draftsmen, transitmen, power engineers, chemists. Mechanical-structural draftsmen for every purpose, premium salaries offered.

WANTED—By major oil company for work in Gulf Coast area experienced lease man, thoroughly familiar with blocking and with purchasing protection acreage. Also able to handle title cure field work. If application interesting will pay expenses Houston for interview; state salary expected. Box B-233, The Oil and Gas Journal, Tulsa, Okla.

BUSINESS OPPORTUNITY

TO RAISE COST of drilling offer 12 alternate eighties semi-proven, ¾ mile from good production end of pipe line, same contours, anticline, $20 an acre; buyer gets three offsets. L. R. Carroll, Roundup, Mont.

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THE SCHEME of life is so arranged that some men have capital and need equipment, while others have salable articles and need cash. For these men, The Oil and Gas Journal Classified Section provides an excellent opportunity to broadcast their wants.

BUSINESS OPPORTUNITY

9,000 ACRES 5-year oil leases for test well 4,000 feet; only four quarters held out; four eighties within half mile of well; 85 per cent solidly blocked; water plenty; located on railroad; on structure mapped by eight leading geologists. Woods County, Oklahoma. W. A. Clark, Alva, Okla.

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P. D. SANDERS
Haskell, Texas

WANTED

WANTED — Driller with own rig capable drilling 5,000 feet. Can deliver 5,000 acres leased for test. Royalty one-eighth and one-twentieth. F. J. Shindler, Deertail, Colo.

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WANTED—A reliable company or oil operator to put down a deep test well on structure in Wilson County, Texas. Max Huerlimann, 621 West Sixteenth St., Kansas City, Mo.

WANTED—20,000,000 cubic feet gas daily for gasoline and carbon black. Wire or write Box 56, Fairbanks, La.

WANT several desirable blocks leases for test wells, must have time to check or core drill for structure, prefer Creek, Okmulgee, Okfuskee or Tulsa Counties. Box B-203, The Oil and Gas Journal, Tulsa, Okla.

WANTED—Producing royalties Oklahoma and Kansas. Give full details. P. O. Box 502, Independence, Kans.

WANTED — Someone to join me in drilling 1,500-foot hole on block of acreage in Miami County, Kansas. Gas now being produced on this block at 424 feet. Box 1, Sainte Marie, Ill.

WANT to turn 10,000-acre block for drilling contract. Solid pool, shallow oil. Fair geology, good mechanical report; in Panhandle Field. Fifty miles of production. Wildcatting much closer. On railroad. W. E. Lilly, Western Oil Exchange, Gage, Okla.

INCORPORATIONS

DELAWARE incorporators. Charters fees small, forms. Charles G. Guyer, 901 Orange St., Wilmington, Del.

Chicago Market Confident, Dull, Weak

Hard Hit by Extreme Weather Conditions. Believed the Low Point for April Will Be 10¼ Cents for U. S. Motors

By J. B. Waldo

CHICAGO, Apr. 3.—The fine weather was succeeded by the worst spell of bad weather that the oldest inhabitant can remember for this time of the year. Storm has followed storm in quick succession with a country-wide fall of snow of such depth as to effectually put an end to any considerable consumption of motor fuel. The expected and natural condition for the season in the petroleum market has been completely reversed. Instead of a growing demand for gasoline and motor oils and a decreasing use of fuel oils of all kinds the sale of gasoline has been very light, while there is an almost frantic demand for fuel oils from the heavy gravity up to straw distillate.

The trade here, however, is confident that this weather cannot last much longer. The gasoline market, though very dull, is not weak and there has been at no time any pressure to sell, except right at the very close of March there were some cars that had been ordered out to complete the shipment of the March purchases that were sold at a little reduction from the established market of 10¼ cents for Navy gasoline. The movement on the part of several leading refiners to increase the price of Navy gasoline to 10½ cents was frustrated by the bad weather, but the price of 10¼ cents to the trade has been firmly held. A few transit cars were offered at 10⅛ and a very few at 10 cents between marketers. So far as can be learned there have been no sales made to the trade at lss than 10¼ cents, and if there have been any, which is generally doubted, the quantity has not been material. It is expected there may be some of these transit cars offered for resale for a few days at some concession in price for orders with shipping instructions.

Low Point for April

It is believed the low point of the April market will be 10¼ cents for U. S. Motor gasoline to the distributing trade. The basis of this belief is the way the market has held under such adverse conditions, the price situation at the refineries and the other fact that there has been little gasoline bought for delivery over April that can be sold at less than 10¼ cents. Some marketers have bought quite a bit of gasoline for April delivery, but the curious fact is that the marketers who usually buy freely seem to have bought very little and those credited with going long on April to any extent are concerns that usually are not large buyers, but cover their requirements as they make sales to their trade. Among refiners the same variation is found. Some say there have been very considerable purchases made in advance, but the majority are of the opinion the buys made for April are less than for March, instead of larger as would be the usual condition at this time of year.

One thing that has given strength to the market for gasoline has been the realization on all sides that it would not do the least bit of good to cut prices. The condition that prevents buying—the weather—is not one to be removed or improved by lowering of the selling price of any product. The demand when it does come will in all probability show as prompt an increase as it did when we had the brief period of good weather about the middle of March. Stocks in the country are small. There are very few who have bought ahead of their early needs and none is buying now. In many cases the contract customers have asked that their shipments that should have been made during the past two weeks, be held temporarily until they get some outlet through a revival of local consumption. Another feature has been the demand for export. There has been quite an active demand for the 60-62 and the 64-66 375 gravities and it has been possible to sell at as good prices for export as to the domestic buyers. The demand here has seemed strongest for the 64-66 grade and small lots have been picked up from marketers who had the gasoline due them, 12½ cents being paid. With so little business being booked as during the past week of almost continuous snow storms, there has been no indication of any special demand. Although with the first of April it became possible to deliver 56-58 gasoline on marginal contracts, there has been no business in this grade here. Shipments of gasoline, as might be expected, have been very prompt, but arrivals have been delayed by traffic conditions. The demand for natural gasoline is reported to be slight and prices are if anything a shade easier.

Kerosene Little Firmer

Kerosene has been a little more firm. Refiners have generally advanced their price ⅛ cent and while some 41-43 water white kerosene could have been bought at 6⅝ cents at the refineries, today the bottom refinery price named is 6¾ cents. The trade reports the demand steady but not large and that the present condition is due to some buying by Sinclair and other larger buyers of kerosene and the light supplies available or at least offered from refiners. The tractor demand is becoming more of a feature of the spring and summer season and some of the buying by country distributors is doubtless due to the use of kerosene for tractor fuel. The actual business has been light, distribution being hampered by so much snow. The average asking price for 41-43 grade is 6⅞ cents, although some sales have been entered by those who were owners of kerosene at last week's costs at 6¾ cents, while others are asking as high as 7 cents for prompt delivery. One large refiner is quoting 6¾ cents for 41-43 and 7 cents for the 42-44, promising prompt shipment on the latter.

The former condition in the furnace oil market has been accentuated by the continued winter-like weather. The distributors have been combing the market for supplies and refiners who six weeks ago were sore on the distillate business because they could not get shipping instructions have been competing with distributors for small lots of distillate and gas oil to apply on contracts. There is very little 38-40 distillate available or being run and the keen demand has forced prices upward until refiners paid the latter part of this week as high as 4¾ cents for a few cars which they had to have. The demand from the country is for single cars and no orders are given unless the seller will give positive assurance of immediate delivery. Several marketers have had such a troubled experience with the distillate shipments they are only selling where they have the car numbers and know the cars have been shipped. The demand during March was most unusual. After the trade had considered the season over and anxious not to be caught with stocks that might have to be carried until fall, the sudden demand caught the entire industry from refiner to the country jobber unprepared. The trucks of the local distributors have been on the go from early morning until late at night and that right through the worst of the weather. There is no 36-38 distillate being refined or at least none is being offered. The market would right now absorb any offerings at 4½ cents gladly.

Gas Oil Active

The demand for gas oil has been most active during the week and very little has been offered. Some who placed orders from 10 days to three weeks ago report they are unable to secure delivery. If they could do so they could make good money, for the advance has been material since these orders were placed. Some who placed orders believe oil that should have been shipped them has been diverted to later buyers who paid a higher price and say they can get deliveries by paying higher prices, of course, to some other refiner. Several of the local refinery offices have been good buyers of gas oil, but not for their own use, they state, but for their customers. There is an idea here that refiners have reduced their runs and are not making as much gas oil as they did and are also running more gas oil to their cracking stills, in this way averaging the output of gasoline without drawing on their crude supplies. In this way refiners are making less and using more gas oil, which accounts, according to some here, for the small stocks which are reported and the light offerings. It seems impossible to get prompt shipment at any price. One specialist in fuel and gas oils said if he had a hundred cars in transit he could sell them all at a good price before night. One refiner paid another 4⅜ cents for straight run gas oil with only the assurance of reasonably prompt delivery. The trade figures that gas oil is safer to buy than distillate, as there is always some demand, and that demand seems to be increasing from tank wagon distributors and from industrial users, as well as for cracking purposes. The market for a straight run gas oil is considered conservatively quoted at 4⅜ to 4½ cents and many prove higher if the demand continues.

Fuel Oil Demand

There has been a very active demand for all grades of fuel oil and all gravities have increased in price with the sole expectation of Smackover fuel oil, which has been sold at seemingly unnecessary low prices. It would seem that with the present demand for refinery fuel oil it would be possible for sellers of Smackover fuel oil to advance their prices for there are many large concerns who can use Smackover or learn to use it just as many buyers who thought they must have a 24-26 gravity fuel oil are finding they can use equally well an 18-22 gravity, refinery fuel oil. The Cudahy contract is a case to the point. When its contract expired it began asking for bids for monthly supplies in the open market. The first order for 200 cars was placed at a price stated at the time to be $1.05. The second order has been placed and the buyer has told bidders he bought the oil at $1.02½. The Cudahy plant is credited with being capable of burning anything that will run or can be made to run, so just what grade of oil will be furnished is a question, but it would seem that any kind or grade that can be used to develop steam should be worth more than the price at which this order is stated to have been placed.

The active demand started with the higher gravities and the heavy fuel oils were not so much in demand. Now every grade is strong and higher in price as well as hard to buy for early delivery. The interruptions to traffic are doubtless the cause for some of the very active local buying of fuel oil but the offerings are very limited and production is claimed to be light with only small stocks available. The local office of one of the large Mid-Continent plants is offering its 18-22 gravity fuel oil at $1.27½ cents for reasonably prompt delivery, although the main office as well as its Tulsa branch has replied to inquiries that they were sold up for April, a condition due in all probability to the fact that a certain number of cars had been allotted to the Chicago office. This is as low as any price now quoted by any refiner or marketer and sales have been made at higher prices. Several of the sellers report they have been obligd to withdraw quotations on all the lighter grades, as they found them unobtainable at a price any buyer would pay. One marketer sold another marketer 28-30 fuel oil at $1.65 and stated that more could have been sold if he had it to dispose of. The 24-26 gravity is commonly quoted at $1.40.

The industrial demand continues active and it is the more apparent because of the number of concerns whose contracts have expired recently. The present prices seem too high for these buyers and they are holding off from renewing their contracts until they can secure a lower price or gather an assurance that present prices will not be reduced. They have expected that the increase in crude runs would give them an argument in favor of lower price but the small demand for gasoline has prevented the expected increase in crude runs in the Mid-Continent Field. So this argument has not worked and the buyers find themselves in a position where, during the past week at least, their chief consideration has been to get what oil they needed. Of course the weather has played a very unexpected part in this commodity as well as in gasoline and buyers and sellers alike are watching the market very closely and avoiding committing themselves any more than they must.

Lubs Little Changed

There has been very little change in lubricating oils. Some of the refiners are rather disappointed at the slow movement on contracts while others state their contract customers are taking their deliveries very well and giving shipping instruction with little urging. So far as station sales of motor oils are concerned there is practically nothing doing and jobbers are holding their orders except where they have contracts or orders calling, as quite a number do, for April delivery. There has been some talk of advancing the prices but no change is reported. The export demand is generally stated to be disappointing but some claim they are shipping about as usual. It is a sort of betwixt and between condition right now as regards exports and some holding back is not unexpected under present conditions. The industrial demand continues to be good but the keen competition continues to be noted in this line and conditions are none too satisfactory so far as the bulk of the sales or prices are concerned. Refiners report they have made good contracts and several concerns that make a specialty of advertised brands sold through local distributors are very optimistic regarding the coming business, at least for them.

Tank Wagon

There has been no general change in the tank wagon market in this territory and while there is a good deal of price cutting in a cloaked fashion the situation is regarded as fairly stable. The question of the quantity discount allowance is coming more and more to the surface and each of the various interests charge the other with using this method of allowing discounts for quantity sales with bad faith and worse practices.

GASOLINE TANK WAGON PRICE RISE INDICATION OF BIG CONSUMPTION

By N. O. Fanning

New York Bureau, The Oil and Gas Journal, 30 Church St., New York

NEW YORK, Apr. 3.—An advance of 1 cent a gallon in the tank wagon price of gasoline in New York and New England by the Standard Oil Co. of New York was the outstanding development in the oil situation on the Atlantic Seaboard during the past week. The rise, which was to 19 cents in most parts of the territory, was followed by leading independent marketers.

Many oil men believe the tank wagon market in New York is a good indication of the general marketing situation, inasmuch as this is the largest gasoline consuming territory, considering its area, while competition is unusually keen. Weakness and strength are often first revealed in this district, followed by corresponding changes in prices.

The rise in prices is believed a direct reflection of increased consumption of gasoline brought about by unusually warm weather during March. This followed an unfavorable February. The first days of April and last days of March have been rather cold and in the outlying districts consumption has been affected unfavorably by snow storms and bad motoring conditions.

Tank car gasoline is steady at around 13 cents a gallon, but it is not plentiful. Sellers are inclined to hold out for higher prices due to the approach of warmer weather, believing that conditions then will warrant higher prices.

March Banner Month

March was a banner month in some respects in the oil markets on the Atlantic Coast. Receipts of oil at Atlantic ports made a new high record of over 18,000,000 bbls. This was believed to reflect both increased consumption of gasoline and larger refinery runs of crude petroleum. An outstanding feature of the receipts was increased bulk receipts of gasoline from California and the Gulf Coast. One large marketer is estimated to have received 20,000,000 gallons more of gasoline by tanker than in February, and, in fact, more than it has ever shipped to the Atlantic Coast in any one month. Most of this came from Port Arthur.

The receipts from the Gulf Coast, the origin of some of which is the Mid-Continent, have not increased, however, proportionately with the increase from the Pacific Coast and Mexico. This indicates that the Mid-Continent is not yet feeling the full effects of the improvement in oil conditions on the Atlantic Seaboard, due to the fact that the surplus in other districts is being cleaned out.

Gas and Fuel Oil

Kerosene, gas oil and fuel oil are firm so far as prices are concerned, although the Standard Oil Co. of New Jersey reduced export kerosene in cases fractionally during the week, due largely to lower prices paid for tin plates.

Featuring these products was Diesel oil, consumption of which has increased materially, with prices tending a little upward.

Lubricating Oils

The market for lubricating oils has continued in a somewhat uncertain state. Competition is said to be rather keen, with the result that prices are not firming up as with other products. The movement of cylinder oils is good but red and pale oils, especially, seem temporarily to be in good supply.

Paraffin wax is moving fairly well, but there has been no outstanding improvement over a week ago. Prices remain unchanged.

Petrolatum

Lily white petrolatum continues somewhat weak at 9½ cents a pound. Amber and light amber are holding firm, with a distinctly better demand. Cream and lily white grades are also firm and unchanged in price at 6 and 8 cents, respectively.

Exports Increase

New York is shipping an unusually large amount of gasoline in bulk to Europe. This business is usually handled by Gulf ports, but in two successive weeks the exports from New York have exceeded 6,000,000 gallons, the total movement for the two weeks ended March 31 were 3,655,500 gallons.

Exports of gasoline in cases are also holding up well, having exceeded the 2,000,000-gallon mark during the past week.

Kerosene exports in cases during the week ended March 31 were 3,655,500 gallons, which is a better mark than has been recorded in some weeks. Bulk shipments were practically nil, however, amounting to only 306,195 gallons.

Asphalt continues to be a feature of the export market, shipments during the week ended March 31 totaling 1,863,900 pounds. This compares with 2,943,000 pounds the preceding week, and 2,016,000 pounds in the week ended March 17.

Petroleum Exports

The following table shows principal exports of petroleum and petroleum products from New York during the last three weeks (figures in gallons unless otherwise noted in parenthesis):

	Week Ended		
	Mar. 31	Mar. 24	Mar. 17
Gasoline:			
Bulk	6,156,867	6,801,582	3,126,324
Cases	2,209,060	2,109,450	1,532,700
Kerosene:			
Bulk	306,195	3,620,340	3,042,587
Cases	3,655,500	1,265,980	1,607,850
Lubricating oil:			
Bulk	745,647	949,141	.....
Barrels	1,509,400	1,558,250	704,600
Cases	274,230	305,640	262,560
Paraffin wax:			
Bags (lbs.)	1,199,220	773,960	3,905,880
Bbls. (lbs.)	204,250	999,875	677,825
Petroleum asphalt:			
Bbls. (lbs.)	1,863,900	2,943,000	2,016,000
Crude oil:			
Bulk	735,928	.....	.....
Barrels	246,400	.....	.....
Gas oil:			
Bulk	154,996	.....	.....

The foregoing figures do not include shipments of less than 500 bbls. or 1,000 cases.

Tanker Charters

The tanker charter market has slowed down perceptibly, with no new fixtures reported during the past week. Of course this does not mean that no business was done, as not all fixtures are made public:

The decline in chartering is natural after the heavy demand for tonnage of the last two months. Many tankers have been taken out of the charter market for several months, and practically every usable vessel is now in use.

It is interesting to note that Russia came into the charter market recently for the first time in many years, and many vessels, largely of British registry, were taken by the Oil Trust on time charters, thus tying them up for a considerable period.

Receipts Continue Large

Estimated daily average receipts of crude and refined oil by tanker at Atlantic ports for the week ended March 31 were 624,000 bbls., against 674,000 bbls. the week ended March 24 and 669,000 in the week ended March 17. This rate, over 600,000 bbls. daily, exceeds the March daily average of 594,700 bbls., which, incidentally, was a high record. It is not expected that the high rate of more than 600,000 bbls. daily can be maintained, however.

Imports from Mexico are continuing heavy, with receipts from the Pacific Coast also large.

Receipts from the Gulf Coast are running large also, and this is considered the best indication of improved oil conditions.

Petroleum Receipts

The following table shows estimated daily average receipts of crude and refined oil by water at Atlantic Coast ports from the Gulf and Pacific Coasts of the United States, and imports, for the last three weeks; also monthly record for the last 12 months (figures in barrels):

	Week Ended		
	Mar. 31	Mar. 24	Mar. 17
Gulf Coast	365,000	387,000	348,000
Pacific Coast	122,000	114,000	124,000
Imports	137,000	173,000	197,000
Total	624,000	674,000	669,000

Daily Averages By Months

1926	Gulf	Pacific	Impts.	Total
March	317,000	97,000	178,000	592,000
February	332,000	73,000	122,000	527,000
January	279,000	59,000	96,000	434,000
1925				
December	298,000	56,000	103,000	457,000
November	259,000	36,000	92,000	387,000
October	249,000	36,000	102,000	387,000
September	306,000	66,000	76,000	448,000
August	291,000	54,000	90,000	435,000
July	391,000	63,000	107,000	561,000
June	379,000	66,000	118,000	563,000
May	312,000	81,000	145,000	538,000
April	353,000	78,000	101,000	532,000

The foregoing estimates are based on the carrying capacity of incoming oil-laden tankers.

NORTH TEXAS MARKET INACTIVE BUT HOPEFUL

FORT WORTH, Tex., Apr. 5.—With the refined oil market in the north Texas territory still in a more or less inactive state, refiners are apparently going to solve the problem by running less crude, particularly in the Wichita Falls territory, where they are running less than for several months.

There are very few strong items on the refined list, the strongest being fuel oil. Export gasoline is maintaining a fairly firm price, but there has been very little buying during the week. U. S. Motor is off slightly from previous quotations and there has been only a moderate amount of buying. In comparison with conditions 30 to 60 days ago, kerosene is about a thing of the past in these markets.

Fuel oil was quoted at $1.50 per barrel and refiners in the Wichita Falls, Electra and Burkburnett areas were selling about all they had to offer. Railroads are heavy buyers now and drilling requirements in Wichita, Wilbarger, Archer and Young Counties are making rather heavy demands for this commodity. The fact that refiners are running less crude and are turning out less fuel than formerly is no doubt responsible.

While the gasoline market has been a little stagnant refiners believe they see better times around the corner. There was practically no buying of U. S. Motor oil at prices ranging from 10 cents to 10¼ cents. Of the three leading export buyers in this territory, only one made any purchases of consequence and done to fill out previous orders.

Refiners are predicting that export buyers will very likely be back in the market with a considerable demand, probably within a week and almost certainly within two or three weeks. Prices were firm on 64-66, 375 end point gasoline during the week at 12¼ to 12½ cents.

PENNSYLVANIA MARKET

OIL CITY, Pa., Apr. 3.—The Pennsylvania refined markets were very quiet during the past week and the increased demand which was expected to come as the season advanced failed to materialize. Cold weather was experienced during the week in most of the eastern territory and cut down the actual consumption of gasoline and motor oils considerably.

There was no activity in the gasoline and naphtha market and this product was weak. Kerosene continued to be strong with a good demand. The demand for fuel oil was fairly good but there were no price changes in this product. There was no price change in the neutral division but there was a good demand. Wax was a little weaker.

LESS NEW FIELD WORK STARTED IN MARCH

(Continued from Page 82)

Estill	7	20	1	0	0	3	3
Wolfe	0	0	0	0	0	1	1
Morgan	5	10	0	0	0	5	5
Elliott	0	0	0	0	1	2	3
Menifee	0	0	0	0	0	2	2
Laurel	0	0	0	0	0	1	1
Jackson	1	0	0	0	0	1	1
Kentucky	61	580	18	0	13	150	162
Tennessee	0	0	0	0	0	7	7
Mississippi	0	0	0	0	2	9	11
Alabama	0	0	0	0	0	4	4
Georgia	0	0	0	0	1	3	4
Total March	61	580	18	0	15	172	188
Total Feb.	113	766	25	8	19	146	165
Difference	52	186	7	8	4	27	23

PANHANDLE GASOLINE FOR WICHITA FALLS

WICHITA FALLS, Tex., April 3.—By the terms of a contract entered into by D. A. Upham, president of the Upham Gas Co., and J. C. Mytinger, president, and Hubert M. Harrison, general manager of the Wichita Falls Chamber of Commerce, the company will build a 16-inch line, from the Wheeler and Gray County gas fields, beginning three miles northwest of Shamrock, to a point two miles east of Wellington. At this point the line is to branch to two 12-inch mains, one line going directly south to Childress, down the Fort Worth and Denver to a point approximately five miles east of Quanah, the second 12-inch line is to run from the division point near Wellington in a southeasterly direction to a point five miles east of Quanah, where it will connect with the 12-inch line No. 1. From this point, where the two 12-inch lines connect, the line will be a 16-inch main to Wichita Falls.

From this line the company agrees to furnish industrial gas in quantities up to a maximum of 25,000,000 feet per day to consumers in Wichita Falls, Electra, Burkburnett, and Iowa Park. The contract provides that the gas to be delivered by the company will be of an exceptionally high grade. The contract provides that it is to be of 1,000 B. T. U.'s or greater per cubic foot.

The Upham Company agrees to have the line in operation and to be ready to deliver gas to consumers by September 1, 1926. Failure to fulfill this section of the contract will call for a forfeit of $300 per day as liquidated damages. The contract, with the amount of gas and schedule of prices, is to remain in effect for a period of five years from September 1.

State offices of the company will be maintained in Wichita Falls, Mr. Upham announced. The company has already closed contracts to furnish domestic gas to Childress, Quanah, Wellington, Memphis, Vernon and other cities between Wichita Falls and the Wheeler County fields.

Under the terms of the contract the chamber of commerce agrees to obtain contracts from industrial consumers in Wichita Falls, Electra, Burkburnett and Iowa Park and vicinities amounting to 15,000,000 feet per day.

LOSING INTEREST IN CHEROKEE COUNTY TEST

CORSICANA, Tex., Apr. 3.—The important test of the Collington Drilling Co. on the Clapp farm, Jewell survey, Cherokee County, being drilled with the financial backing of the Humphreys interests, was last reported at 3,365 feet in shale. Interest in it has lessened recently because of the depth to which it has gone without finding sand. Another test will be drilled 2 miles west of the test on the Clapp farm if it is a failure.

In Anderson County the Navarro Oil Co.'s No. 1 on the Greenwood farm, Cook survey, got salt water at 1,355 feet, total depth 1,363 feet. It was plugged back to 571 feet and tested dry, and has been abandoned.

In Ellis County the Simms Oil Co. got the top of the lime at 1,694 feet and was drilling at 2,200 feet in No. 1 Griffiths, De la Pena survey.

F. Haynes is rigged up to drill No. 3 Bounds, Jefferies survey, in Henderson County.

In Limestone County the Pure Oil Co.'s No. 26 Boyd, McNulty survey, a shallow test, got sand at 1,386-89 feet and salt water. It has been abandoned. The Transcontinental Oil Co. is playing a fault line west of the Mexia Field in its test on the Rose farm, Varela survey, which was last reported at 2,608 feet. Reiter-Foster Corp. and Lucas & Lewis' No. 1 DeLong was not abandoned as reported and the crew was last reported on a cleaning out job, total depth 2,272 feet.

Simple Installation for Clay Filtering

Inexpensive Equipment for the Treating of Gasoline in California Lowers Costs and Holds Color in Sunlight

By George W. H. Reid

Straight run gasoline derived from a great majority of West Coast crude oils has among its properties that disagreeable tendency to change color in storage, or in sunlight, a condition not entirely peculiar to California oils, but one which appears with certain classes or types of crude oil throughout the entire industry. In combating this condition the West Coast refiners have resorted to the use of many schemes, and the fact that success has been secured is attested by the gasoline appearing in the bowls of the station pumps. Certain successful methods, however, are entirely out of line when based upon the cost of treatment and the selling price of gasoline. The actual problem as existing today is one of reduction of treating costs—still maintaining a permanent plus 30 color gasoline. Opinions differ as to the best treating methods as applied to this problem, but ot present the majority of the plant operators are employing the treated powdered clays for the final clarifying action. This is usually termed the contact method. It consists in agitating the untreated or partially treated gasoline with the clay, followed by the removal of the spent clay from the gasoline.

Figure 1—Filter press and clay hopper in contact method installation.

It is perhaps well to note here that the California refiner does not treat for the so-called doctor test. The usual distillation of most California crudes yields a water white, doctor sweet gasoline. This gasoline, however, rapidly loses its crystal whiteness, assuming a sickly yellow cast and often turning various shades of pink.

Certain refiners merely agitate the oil and clay together in the batch agitator, and then permit the clay to settle out by gravity. This method is not recommended by either the clay manufacturers nor the technologists of the industry. Where the method is employed the gasoline storage tank bottoms are usually covered with a layer of clay which indicates that sufficient settling time has not been allowed, and clay particles, unless filtration is employed, may remain suspended in the oil to be of damage to the ultimate consumer of the gasoline.

J. A. and Frank A. Millif of the Marine Oil Corp. of Union, Calif., have designed and perfected certain equipment for handling gasoline by the contact method which is of much interest because of its simplicity of design and economy of construction and operation. The equipment is of interest because of the above mentioned characteristics and also because of the experiments of great numbers of refiners who are working on the contact method with gasoline derived from other crudes, and with gasolines obtained from many of the cracking processes.

Method of Operation

Treating in the Marine plant is reduced to the lowest per barrel cost that the writer has knowledge of, so far as the West Coast methods are concerned, and the operation is one of utmost simplicity. First the gasoline is treated very lightly with acid—usually three-fourths of one pound, or less—washed with water and settled. Sometimes no alkali is used whatever, depending on the source of the crude, etc. After this light and short treatment in batch agitators handling 1,000 and 500 bbls., respectively, the gasoline is ready to go to the contact filtering plant. As is noted the contact filtering plant is relied upon to perform the bulk of the actual treating work, for three-quarters of a pound of acid is far below the average amount of acid used to treat California gasoline.

The gasoline flows from the agitator by gravity through a 3-inch line, to the mixing chamber of the contact clay system. In Figure 1, to the right of the photo, is seen the inlet line. Note that almost the entire assembly shown in Figures 1 and 2 is "homemade" construction and materials. Just behind the control valve in the inlet line is placed a valve working with a lever, which opens or closes the inlet line at the will of the operative, thus controlling the operation both from the bottom of the agitator and from the filter plant. As the gasoline enters the mixing chamber, the float housed in the large upright 6-inch nipple rises. As this float rises the control level is caused to shut the valve on the gasoline inlet line, thus controlling the level of gasoline in the mixing chamber and the rate of flow of gasoline into the chamber positively and automatically. Through this control device a certain predetermined volume of gasoline is permitted to flow into the mixing chamber per minute, to meet and mix with a certain controlled and determined amount of powdered treated clay.

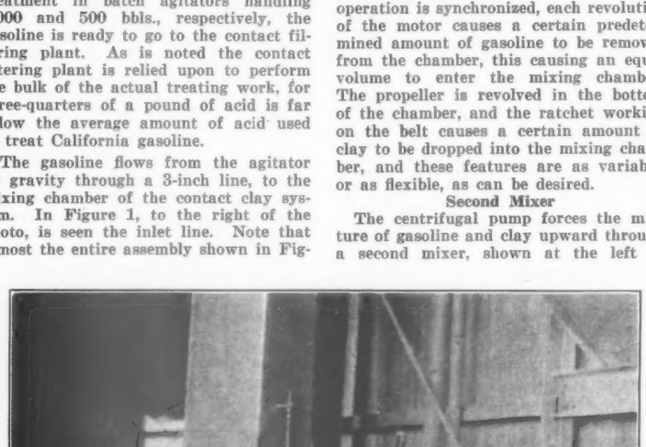


Figure 2—Variable ratchet controlling movement of the continuous clay carrier belt.

Agitate Gasoline

In the bottom of the mixing chamber (the box-like device center of Figure 1) there is a constantly revolving paddle, rotating in the opposite direction to the incoming gasoline flow. The paddle or propeller is connected to the drive shaft of the centrifugal pump. Thus the gasoline is delivered to the mixing chamber and agitated.

The clay is poured into the hopper, shown in the foreground of Figure 3, and stored in the bottom of the hopper, as shown in the center of Figure 2. The electric motor, which drives the centrifugal pump, and the propeller as explained above, also drives the belt, which is seen in the safety guard in Figure 1. This belt drives or revolves the ratchet wheel as shown in Figure 2, and each time the wheel turns, the "dog" and ratchet is turned, pulling the continuous belt bearing the clay slightly forward. The ratchet is variable, so that the belt bearing the clay to the mixing tank may be pulled forward 1, 2, 3, 4 or 5 inches, as required. The amount of clay to be deliverd to the mixing chamber is further regulated by lifting or lowering a sliding trap on the front of the clay hopper, just above the clay-bearing belt. The entire operation is synchronized, each revolution of the motor causes a certain predetermined amount of gasoline to be removed from the chamber, this causing an equal volume to enter the mixing chamber. The propeller is revolved in the bottom of the chamber, and the ratchet working on the belt causes a certain amount of clay to be dropped into the mixing chamber, and these features are as variable, or as flexible, as can be desired.

Second Mixer

The centrifugal pump forces the mixture of gasoline and clay upward through a second mixer, shown at the left of Figure 1. This chamber is made of pipe, 8 feet long, and consists of alternate orifice plates placed closely together throughout its length. This second mixing chamber assures thorough and intimate contact of gasoline and clay. In the words of the operative on duty at the time of the writer's visit, "the gasoline is first paddled and then spanked."

The oil flow is upward, flowing into the inlet line to the filter press. Figure 3 shows the No. 7 Sweetland gasoline filter press; the gasoline intake line is seen just behind the clay hopper. In the operation of this press for gasoline filtration, the Marine Co. recommends the use of wool felt sacks in preference to canvas. The gasoline is allowed to circulate through the press until the sacks on the plates are well coated with clay, then the gasoline is diverted to storage. In Figure 3 the press is open, having just been cleaned. A cleaning time of only 15 minutes is allowed at the company's plant. When the press becomes full of clay compressed air is turned into it for a few minutes to dry the clay before dumping. This particular press is designed to handle 300 bbls. of gasoline per hour.

A detailed description of this apparatus has been given for the reason that there exists among refiners the current opinion that the application of the contact method of clay treating and filteration involves a large amount of cumbersome equipment, and perhaps a great outlay of cash. With the exception of the filter press, electric motor and centrifugal pump in this installation, the entire filter plant was constructed of material picked up about the plant yard. The entire equipment occupies a very small area, probably a space 15 by 15 feet. The cost of the entire installation was about $5,000, including $3,500 paid for the press.

Figure 3—Motor, pump, mixing chambers and float control of clay contact filtering installation at the Vernon, Calif., refinery of the Marine Oil Corp.

The results obtained in treating gasoline in this installation are notable in that the plant has been in operation for many months, and there is no trace of clay on the gasoline storage tank bottoms. The clay used in contact filtering, or treating, averages about 2 to 5 pounds per barrel of gasoline, at $18 per ton. The acid consumption at the plant is less than one-third of the former requirements, and the caustic consumption is reduced more than the acid, for in this equipment the clay is doing most of the treating work, and turning out gasoline continuously of 30 plus color which is not at all affected by storage conditions or sunlight.

ROCKY MOUNTAINS

(Continued from Page 56)

In the Cat Creek Field, the Continental Oil Co., formerly the Mutual Oil Co., received a total of 83,176 bbls. Of this amount, the Continental had purchased or produced 35,571 bbls. and was transporting for other companies and producers a total of 47,604 bbls. The Continental Oil Co. sold to the Standard Oil Co. of Indiana 11,254 bbls. and to the Utah Oil & Refining Co. 6,978 bbls. The production of the other firms went as follows: the Yale Oil Corp. took 6,316 bbls.; Lewistown Oil & Refining Co., 27,964 bbls.; Arro Oil & Refining Co., 12,297 bbls.; North Star Oil & Refining Co., 5,285 bbls.; Utah Oil & Refining Co., 7,309 bbls.; Hart plants, 2,396 bbls., and the Silver Bow Refining Co., 2,689 bbls.

The Continental held 106,261 bbls. of its own crude in tanks and 12,861 bbls. in storage for other firms at the end of the month. Also the company had 194,122 bbls. of storage empty.

In the Cat Creek Field, the oil from government-owned lands totaled 73,000 bbls. production for February and the Lewistown Oil & Refining Co. has the contract for the receiving of all this royalty oil produced from government lands. The refining company paid to the Govment the sum of $11,756.95 for the royalty oil after the producers had taken their shares.

Black Horse Butte

The California Oil Co. is moving in material to drill a wildcat well on Section 25-17-24, on what is known as Black Horse Butte, Petroleum County, Montana. This is a wildcat structure; it lies west of Cat Creek Field. This structure is also known under the name of Wild Horse Lake Dome.

The two wildcats drilled in the Aloe district, southwest of the Sunburst Field have proved failures. The Ohio Oil Co. drilled one well and the Sunburst Oil & Refining Co. and the Fulton Oil Co. and Rice interests drilled a second well. Both holes went below where the Ellis sand should have been, but failed to find production.

The Shelby Pipe Line & Refining Co. has started work on a refinery at Shelby, this plant to have a capacity of 1,250 bbls. to start with. The refinery is located west of Shelby about half a mile and expects to draw all its crude from the Sunburst Field north of Shelby about 10 miles.

In the southeast corner of the field, Section 6-34-1, the Weiser-Crosby Oil Co. is starting a wildcat that is expected to extend the development in that direction. This company is a new corporation, hailing from Iowa and North Dakota.

The Homestake Oil Co., drilling on Section 36-35-2, has only a nominal producer instead of a big gusher. The well fell off rapidly from its initial flow and is now down to about 50 bbls. per day.

The Ohio Oil Co. has a dry hole on Section 35-25-1, drilled to the Ellis sand at 1,650 feet and found only a foot of sand before going into the lime. Water came in from this sand.

Mid-Northern Oil Co. completed what appears to be a duster on Section 9-35-2, this well finding the Ellis sand at 1,650 feet and drilled to 1,700 feet, then plugged back and shot.

Salt Creek Royalty Bids

The State Land Board of Wyoming announced the Producers & Refiners' bid for the royalty oil of state-owned lands in the Salt Creek Field as the highest bid offered and awarded the production to that company. The award was announced at noon Friday, April 2.

The state lands in Salt Creek produce about 45,000 bbls. of oil per month as royalties from the different tracts. The royalties vary from 12 per cent on some tracts to 65 per cent on the famous Section 36 in the heart of the field. This high royalty of 65 per cent was obtained through the wishes of the Midwest Refining Co.'s officials who did not want to see the great field gutted when the Haskell interests sought to take the state lands under their control in 1924. Had the Haskell interests succeeded in their aim, Salt Creek would have experienced a period of line fighting probably never before equaled.

The Continental Oil Co. has a contract for all the royalty oil at present and this contract will expire September 30. Then the Producers & Refiners will take over the crude. The Producers & Refiners' contract will run for three years, terminating September 30, 1929.

The bid of the Producers & Refiners set the posted market price of Mid-Continent crude as basic price for the royalty oil and a premium of 31 cents per barrel for the first 50,000 bbls. each month. Then an additional premium of 20 cents for the next 25,000 bbls. and a 10-cent premium for all production in excess of 75,000 bbls. per month. In case Salt Creek Field prices are posted and are higher than Mid-Continent prices, then Salt Creek posted prices shall be the base and at no time shall the price per barrel be less than $1.50.

The state-owned lands in the Salt Creek Field are as follows: Section 36-40-79, Section 16-39-78, SE Section 16-40-79.

The Producers & Refiners will ship this oil through the firm's pipe line to Casper and then to Parco where the company has its large refinery. At present the Parco refinery is refining crude from Lost Soldier and Ferris, also from Simpson Ridge and shipments are received from the Colorado fields and other points by rail.

Through obtaining this contract, the Producers & Refiners Corp. will have a large supply of crude that will enable the Parco refinery to run at capacity for the coming three years. As it is located on the Union Pacific main line, the refinery products can be shipped direct to the markets over this transcontinental line.

The other bids received were from the Prairie Oil & Gas Co., which offered a minimum of $1.65 per barrel and based its bid on Mid-Continent prices; the Midwest Oil Co., which offered a bid based on Mid-Continent prices, and a bid offered by W. C. Kinkead, an attorney of Cheyenne, who failed to deposit a check for $25,000 as required and who could not show that the oil was to be refined in Wyoming. Both of which were required by the Land Board. Some joker sent in an envelope marked "Bid for royalty oil" and containing only blank paper, probably as an April fool joke.

Field Reports

The Producers & Refiners and the Hatfield Oil Co., drilling a joint well on the Eight Mile Lake structure south of Rawlins, Wyo., struck a large gas flow estimated at 20,000,000 feet, on Section 26-20-88. This is the No. 3 well of the two companies and the gas will be used at the Parco refinery of the Producers & Refiners for fuel.

The Union Oil Co.'s No. 3 Buckeye on Section 31-10-68 in the Fort Collins Field is in the Muddy sand and showing for a producer at 4,469 feet. Full completion of the well will not be had for several days.

The Hidden Dome well of the Ohio Oil Co., in the Big Horn Basin of Wyoming, has not reached the Lakota sand. Casing trouble developed and the water from the Dakota sand is still in the hole. This well is the first deep test on Hidden Dome below the Frontier formation which produces gas.

The deep well of the Transcontinental Oil Co. in the LaBarge Field, Section 9-26-113, is dry and will be abandoned at 2,250 feet. The same company will drill a second deep well on the same section, according to reports. Collapsed casing in the duster is reported to have caused the abandonment.

The Texas Company has sent a corps of geologists and scientists to the LaBarge Field for the purpose of studying the fossils and strata there to determine what period the oil production comes from. It has long been a matter of controversy as to whether the oil in LaBarge comes from the Frontier formation of the Cretaceous or the lower Tertiary and The Texas Company's men are to make a definite determination.

The Transcontinental Oil Co. and the Utah Oil & Refining Co. are reported to have reached an agreement to drill a joint test on Section 16-26-113 in the LaBarge Field. The lease is said to carry terms which would bring its cancellation within a month or two unless work is started in the near future.

In Natrona County, about 12 miles west of Casper, on the Emigrant Gap structure, a syndicate of Casper business men have secured a block of leases and will drill a test. The exact location has not been made, but a closed structure imposed on the Emigrant Gap anticline has been surveyed and hopes are high that a new pool will be found there. R. J. Mosher, a prominent oil operator and contractor of Casper and Salt Creek, is at the head of the syndicate and will use his tools in putting down the well.

The Prairie Oil & Gas Co. completed a gasser of 15,000,000 feet capacity on Mahoney Dome, in the Lost Soldier Field. The sand was found at 2,701 feet.

The Texas Company completed a 25-bbl. well in the Salt Creek Field on Section 29-40-78, finding the second Wall Creek sand at 2,600 feet.

The Argo Oil Co. is drilling its deep well in the Pilot Butte Field in Fremont County, Section 27-3-1, deeper and has reached a depth of 3,110 feet open hole. This is the well that found production in the Muddy sand while all the other wells in the Pilot Butte Field find their production in a shale fault about 900 feet deep. The well is carrying an open hole and is not expected to be used as a producer even should oil be found deeper.

Runs From the Fields

Salt Creek	52,450
Teapot	1,380
Big Muddy	3,470
Grass Creek	2,810
Elk Basin	630
Greybull	15
Rock River	3,050
Lance Creek	2,150
LaBarge	200
Poison Spider	300
Osage	350
Hamilton Dome	1,290
Lander	270
Byron	30
Lost Soldier	4,270
Ferris	40
Simpson Ridge	230
Cat Creek	2,700
Sunburst	19,000
Lake Basin	165
Florence	400
Moffat	2,935
Fort Collins	2,655
Tow Creek	105
Ilea Dome	100
Boulder	25
Rangeley	100
Hogback	490
Rattlesnake	280
Artesia	3,000
Total	104,890

Harreld - Hastings Indian Title Bill Awaiting Signature

WASHINGTON, D. C., Apr. 5.—The Harreld-Hastings bill, introduced in the present session of Congress by Senator J. W. Harreld and Congressman W. W. Hastings, has been passed by the Senate and the House and sent to the President who has referred it to the Interior Department before signing it.

The bill provides that conveyances of inherited lands by adult full-blood members of the Five Civilized Tribes shall be approved by the County Court where the allottee was a resident at the time of his death and that the jurisdiction of the Court to approve such conveyances shall not be subject to collateral attack but that all such approvals as have been made in the past and those to be made in the future shall be conclusively presumed to have been made with jurisdiction.

Section 2 applies the statute of limitations of the State of Oklahoma to restricted Indians of the Five Civilized Tribes, thus setting at rest many disputed questions of title. The operation of the statute of limitations is held up, however, for two years after the date of final approval of the act.

The third section provides a procedure by which the United States may be made a party to actions brought in the State Courts involving validity of titles to restricted Indian lands and by which the United States may remove such causes to the Federal Courts, but that the final decision, whether removed or not, shall bind the United States as well as the restricted Indian. This is a new departure with reference to restricted Indians and will automatically abolish a great deal of vexatious litigation. Lawyers familiar with the matter are of opinion this legislation will greatly enhance the value of lands, oil properties and mining properties in the territory of the Five Civilized Tribes.

Continental Sells Rattlesnake Oil to Humble Refining Co.

DENVER, Col., April 3.—Contintal Oil Co., has contracted the sale of a part of its production on the Rattlesnake and Table Mesa domes in Northwestern New Mexico to the Humble Oil & Refining Co., to be run to the latter's refinery on the Gulf Coast, through the new 95-mile 4-inch pope line from the field to the Atchison, Topeka & Santa Fe Railroad at Gallup, N. M. The line will have a capacity of 5,000 barrels daily.

Twelve producers have been completed on the Rattlesnake and five on the Table Mesa domes. The wells now are shut in. The oil is unusually light and high in gravity.

The Rattlesnake property is operated jointly with the Santa Fe Co., controlled by S. C. Munoz, and associates. The production comes from the Dakota sand at around 800 feet. A deep test to the Pennsylvania is now being drilled. This test has encountered several producing horizons in the upper formation from two of which came a flow at the rate of 2,600 barrels daily.

COLOMBIA'S LARGEST DRILLED ITSELF IN

PANAMA, P. R., Apr. 3.—The first well drilled on the 500,000 acres held by the Leonard Oil Co. in Colombia was recently drilled to the top of the sand and then drilled itself in, burning the rig and blowing the tools out of the hole. It looks like the largest well yet finished in Colombia.

The new pipe line in Colombia was recently completed and the first test was made on February 14, marking the opening of pipe line transportation to the Colombian fields. There are eight stations on the line which can handle 35,000 bbls. of oil a day. It took 270,000 bbls. of oil to fill the line. Some of the big holdings in Colombia are owned by the Tropical Oil Co., which has 2,000,000 acres and has 12 wells at the top of the sand which are rated at 70,000 bbls.

The pipe line was recently inspected by officials of the International Petroleum Co., the Imperial Oil Co. and the Andean National. The party consisted of A. P. McQueen, vice president of the International Petroleum Co.; E. P. Burns, a director in the same company; Captain Flannigan, president of the Andean National Co., which built the 400-mile pipe line in Colombia; Captain Flannigan's secretary, Mr. Schoenleben, who is connected with the Standard Oil Co. of New Jersey, and O. P. Hopkins, geologist.

CALIFORNIA AGENCY MEETING

BAKERSFIELD, Calif., Apr. 3.—Secretary W. B. Robb announces that the annual meeting of the California Independent Oil Producers Agency will be held in Bakersfield Wednesday, April 14. The Union Oil Co., holding stock control of the agency, is the purchaser and distributor of all Agency crude oil by virtue of an agreement running until 1930. Combined annual production of Agency members, including the Union Oil Co. in California, is nearly 19,000,000 bbls.

REFINING AND MARKETING

AMERICAN OIL WORKS HAS BEEN REORGANIZED

TITUSVILLE, Pa., Apr. 3. — The American Oil Works of this city, which has been in business for the past 39 years, has been completely reorganized with a new board of directors and new group of officers, according to an official announcement by the company. The new officers are: John A. Beck, Karns City president; Wayne K. Glenn, Butler, and Dr. H. A. Downs, Oil City, vice presidents; A. B. Weingard, Butler, secretary and treasurer. Mr. Weingard, who is a former resident of Oil City, will move to Titusville soon and assume the general managership of the plant. J. B. Turk, who has been with the company for some time, will be general superintendent. The officers, with Henry J. Myers, of Chicora, and W. W. Beck, of Karns City, will constitute the new board of directors.

It is the intention of the company to spend not less than $200,000 on improvements and enlargements. It has already started a Sharples process plant for the making of long residuum motor oils and bright stocks and the building is well under way. There will also be added the latest improved filtration plant for the making of neutrals, bright stocks, etc. It has already installed a Fleming improved gasoline cracking plant.

While the Pennsylvania Refining Co. and the American Oil Works will be closely allied yet each will be operated as a separate unit.

MARLAND MARKETING CHANGES ANNOUNCED

Due to the taking over of stations belonging to the Derby Oil Co., several changes have been made in the division and departmental heads of the marketing department of the Marland Oil Co. The changes which were effective are as follows:

George J. Woods, manager of the central division, became manager of the western division, with headquarters at Wichita, Kans. J. R. Hamill, Jr., superintendent of the southwestern division, became manager of the central division, with headquarters at St. Joseph, Mo. C. R. Blevins, district superintendent of the southwestern division, became superintendent of the western division, with headquarters at Wichita, Kans. J. W. Murrell, manager lubricating oil sales, southwestern division, became manager lubricating oil sales of the western division, with headquarters at Wichita, Kans. A. W. Horton, agent at Oklahoma City, became superintendent southwestern division, with headquarters at Ponca City, Okla. R. C. Sowder, agent at Tulsa, became manager lubricating oil sales, southwestern division, with headquarters at Ponca City, Okla.

EMPLOYES INVESTMENT FUND

The Pure Oil Co. put into effect April 1 the Pure Oil Employes Savings Investment Fund for the benefit of its employes. The fund continues for four years, and any employe who has been with the company for six months is eligible to subscribe to a maximum of 25 per cent or a minimum of 5 per cent of his total four years' salary. Payments are made by semi-monthly deduction from salary. The company pays 8 per cent interest on the total subscription from the start and charges 6 per cent on the unpaid balance. At the end of the four-year period the company agrees to deliver the par amount of the subscription in the company's 6 per cent preferred stock and in addition a cash premium of 25 per cent, so that for each $100 saved the employes will receive one share of preferred stock and with the extra interest and premium $44.25 in cash as well. There were 5,450 of the company's 8,000 employes deemed eligible to participate and of these 4,250 subscribed for a total of $4,350,000 on April 1.

AVERAGE TANK WAGON SHOWS GAIN ON APRIL 1 OVER PRICES MARCH 1

Due almost entirely to general advances on the Pacific Coast and in New York and the New England States during March, the average tank wagon price of gasoline in the country showed another increase April 1 over that of the same day of the previous month. The average price, based on postings in 50 representative cities compiled by The Oil and Gas Journal, was 17.557 cents on April 1 while on March 1 it was only 17.267 cents. This represented a gain of .29 cent for April.

However, with the exception of the general advances mentioned, tank wagon prices were practically stationary as a result of uncertain refinery markets in these other areas. The only other changes in the 50 cities were in the Rocky Mountain district where the Continental Oil Co. posted advances in just a part of its territory.

The tank wagon advance on the Pacific Coast followed a general increase in crude prices, and reflected a more or less firmer refined situation. The eastern advance, while indirectly the result of the stronger Pacific Coast situation in which gasoline delivered at eastern ports went up, reflected a more settled condition as a whole. Refined markets in other areas, where tank wagon postings were unchanged, were generally weak.

Although tank wagon prices showed an increase April 1, over those of March 1, they still lacked 1.123 cents of equaling that of April 1 a year ago, when the average price of the 50 cities was 18.68 cents. However, the general trend of tank wagon prices this year has been in contrast to that of last year when postings at this time were being cut. March this year, was the fourth consecutive month in which prices were advanced, meaning a gain of 2.029 cents since November 1.

An increase in the gasoline tax in Virginia from 3 to 4½ cents a gallon and one in Mississippi from 3 to 4 cents, also caused an increase in the average tax paid in the 50 cities from 2.38 cents on March 1, to 2.43 cents on April 1. The Mississippi increase was effective April 1.

(Continued on Page 152)

Average Tank Wagon Prices in Fifty Cities

April 1	18.68
May 1	18.352
June 1	19.122
July 1	19.387
August 1	19.413
September 1	16.703
October 1	15.808
November 1	15.528
December 1	15.763
January 1, 1926	16.133
February 1	16.213
March 1	17.267
April 1	17.557

FREIGHT RATE ADJUSTMENT

CHICAGO, Apr. 3.—Effective April 1 the freight per gallon on gas oil to this city and several other points in Standard of Indiana territory were increased from 2.18 cents per gallon to 2.22 cents per gallon and on fuel oils from 92 cents per barrel to 93¼ cents per barrel. These changes are made in accordance with a ruling of the I. C. C., that the differential in freight between gasoline and gas and fuel oils must not exceed 6 cents per 100 pounds. The rate per 100 pounds from Group 3 points to Chicago and several points in the territory west of the Illinois-Indiana state line has been 36 cents and on gas and fuel oils 29.5 cents. The increase is one-half cent on the heavier oils to 30 cents per 100 pounds. Traffic managers state that no changes have been announced in the rates from Shreveport or north Texas points, the only change being the advance of one-half cent per 1000 pounds on heavy oils from Group 3 points.

P. & R. BUYS STATIONS

CHICAGO, Apr. 3.—The Indian Refining Co. of Lawrenceville, Ill., has sold several stations in Tennessee and Virginia to the Producers & Refiners Corp. of Tennessee. The sale includes one bulk and seven service stations at Knoxville, Tenn.; two service stations at Bristol, Va., and a bulk plant at Harriman, Tenn. The sale is in line with the present policy of the organization to dispose of all outlying stations and concentrate its distribution at points within easy hauls from the refinery and where conditions as regards competition and expense of operation are most favorable.

COMMITTEE D-2 HOLDS SESSIONS ON FUELS

By Charles E. Kern
Washington Bureau,
The Oil and Gas Journal

BALTIMORE, Md., Apr. 3. — During three days there have been sessions here of Committee D-2 of the American Society for Testing Materials. About 35 members of the Committee, which consists of representatives of about 80 oil companies, were assembled from all parts of the United States.

Reports were received from 27 subcommittees and nearly half that number of subcommittees held meetings today. As no action will be conclusive until voted on by the entire membership, no announcements were made regarding the work of the committees.

It is known, however, that the discussions principally centered around proposed changes in specifications for motor fuels. The conclusions in regard to the changes will be announced at the annual meeting to be held in June at Atlantic City.

A joint meeting was also held with the lubricating division to discuss the grading of motor fuels on a basis of viscosity. A joint meeting with the technical committee of the Government was also held.

CHICAGO POSTAL CONTRACT

CHICAGO, Apr. 3.—The contract to supply the Chicago post office with U. S. motor gasoline over the three months' period beginning April 1 was awarded to the Seneca Petroleum Co. of this city of which O. E. Husle is the head. This is the first time this organization has landed this business. The quantity is approximately 70,000 gallons per month and is called for by the truck of the post office department which distributes the gasoline to the various garages. The bid was 13¾ cents flat over the period or 4½ cents below the local tank wagon price with a maximum of 13¾ cents.

Government to File New Brief in Suit On Cracking Patents

By Charles E. Kern
Washington Bureau
The Oil and Gas Journal

WASHINGTON, D. C., Apr. 5.—During the next few days the Department of Justice will file a supplemental brief further alleging illegal methods in obtaining control of all basic patents for the production of gasoline by the cracking process. This action will be against the Standard Oil Co. of Indiana, the Standard Oil Co. of New York and 50 others.

It will be claimed that gasoline users are compelled to pay from one-half to 1¼ cents per gallon more for gasoline on account of this alleged illegal use of the cracking process. They figure this added cost to the public on the basis of 7,000,000,000 gallons of gasoline annually.

This supplemental brief will include, in addition to the defendants previously named, the M. W. Kellogg Co., which now controls the Cross cracking process, and will add that Joseph H. Adams, one of the developers of the Adams patents, has joined the combination. It is stated that suits will not only be prosecuted in Brooklyn but also in Chicago.

REFINERY TOPS RATES BASIS OF PETITION

WASHINGTON, D. C., Apr. 5.—A petition that has proved a surprise to the Interstate Commerce Commission has been filed in what is known as the "refinery tops" case, technically known as I. C. S. Docket No. 2589. This petition calls for reopening the hearings in that case filed with the commission by the Arizona Farm Bureau and others. They wish to present new evidence discussed and developed subsequent to the hearings held at Los Angeles beginning February 24, by Special Examiner Aitchison.

In this case the regulating body suspended tariffs filed by railroads carrying petroleum products from California points to destinations in Arizona, New Mexico and western Texas defining the various petroleum products such as fuel oil, gas oil, and engine (naphtha) distillate, by means of specific gravity and flash point criteria. The effect of the tariffs, according to the representations of those who procured their suspension, would be to raise the rates on what they called "gas oil" or refinery tops, about 100 per cent, and make it bear the burdens placed upon the most highly refined products.

GRAND RAPIDS JOBBERS IN PETROLEUM CLUB

The Grand Rapids Petroleum Club was formed last week at a meeting of independent jobbing interests of that city. James A. Gilmore, secretary of the Michigan Independent Oil Men's Association, was elected president of the club. Other officers are F. S. Grimes of the Grimes & Madigan, Inc., vice president, and H. H. Cornelius of the National Cooperative Oil Co., secretary and treasurer.

The club will hold luncheons monthly. The purpose of the organization as announced by its sponsors is to "promote and foster a friendly cooperative spirit among independent oil distributors of Grand Rapids."

AWAIT MEXICAN RULES

NEW YORK, Apr. 6.—American oil officials who have returned from the conference at Mexico City declined to comment on the new petroleum law regulations in Mexico before official publication and translation of the regulations are made, probably within the next few days.

TANKS
ANY SIZE
Erected
Anywhere

Graver Builds

Tanks
Welded
Riveted
GIONS
(Riveted, Inside & Outside Welded)
Structural Supports
Tower Tanks
Standpipes
Any Size Tanks
Erected Anywhere

Refinery Equipment

Jenkins Cracking Process

Stacks-Breechings

General Steel Plate Construction

Water Softeners
Hot Process
Cold Process
Zeolite
Household

Filters—*Pressure*

Purifying Systems *for* **Swimming Pools**

GRAVER *Corporation* *Founded 1857*
EAST CHICAGO, INDIANA

NEW YORK Grand Cent. Term. | CHICAGO Steger Building | TULSA Atlas Life Bldg. | HOUSTON West Building

Brief Items for Plant Operators

INQUIRIES FOR STEEL FOR ROXANA REFINERY

CHICAGO, Apr. 3.—The various steel-making companies at Gary, Hammond and adjacent points report they have received inquiries for bids on 6,000 tons of steel, mostly plates, from the Roxana Petroleum Corp. The deliveries are to be made to the refinery site in East Chicago and at Hammond. Active work is only awaiting the action of the City Council of East Chicago on the franchise for a pipe line connecting the refinery site with the deep water ship canal on which the Roxana Petroleum Corp. has a five-acre site for the construction of docks and tanker loading racks. Preliminary data have been secured for foundations and a topographical map showing the placing of the various buildings is ready as well as some completed plans and specifications.

Engineers of the pipe line division have been at Kankakee, Ill., this week surveying for a crossing of the Kankakee River at that point. The plan for the refinery calls for the erection of the storage tanks and railroad loading racks in Hammond and of the refinery and docks in east Chicago.

It is announced that Dr. R. H. Waser, who is in charge of the refinery at Arkansas City will be the head of the new refinery in the Calumet district. The pipe line from Roxana, Ill., to the new plant will be an 8-inch line and work on this line will be begun as soon as the condition of the ground permits.

EFFECT UPON POWER OF OIL VISCOSITY

Some attention has been given by the Bureau of Standards, Department of Commerce, to the relation between oil viscosity and the torque required to start an automobile engine in rotation or to bring it up to a given speed. From the results thus far obtained it appears that while the viscosity of the oil does have a pronounced effect upon the power required to crank the engine at speeds of 100 r.p.m. and higher, it does not have any appreciable influence upon the torque required to start the engine rotating.

Interesting information on other lubrication problems has also been obtained as a by-product of the fuel research which has been in progress at the bureau for several years. Among other things it has been shown that excessive dilution of crankcase oil is one of the chief obstacles to the use of fuels of low volatility. An intensive study of this phenomenon has been made, and as a result considerable knowledge was gained both as to the probable mechanism of dilution and the measures which may be adopted to prevent or reduce trouble from this source. One phase of this study has been the development of suitable apparatus and methods for measuring dilution.

BAYTOWN ENLARGEMENT

The Humble Oil & Refining Co. at its Baytown, Tex. refinery started operating during the past week five additional units of the tube and tank process. The new units make a total of 21 now in operation. The company has five more units under construction. These will be placed in operation about June 1.

TO ADD CRACKING PROCESS

The Interstate Gasoline Co. has announced its intention of installing cracking equipment at its Iowa Park, Tex. refinery. The plant which has been shut down for several months has a skimming capacity of 2,000 bbls. daily.

NATURAL GASOLINE ASSOCIATION PROGRAM FOR TULSA MEETING

Technical papers and general discussions of operating problems will feature the annual convention of the Association of Natural Gasoline Manufacturers which will be held May 5 and 6 at the Hotel Mayo, Tulsa. Several papers by technologists, well known in natural gasoline circles, will be presented followed by round table discussions of other phases of the problem presented.

C. C. Herndon, vice president of the Skelly Oil Co., Tulsa will deliver the principal address at the banquet to be held Thursday night, May 6. James A. Veasey, chief counsel of the Carter Oil Co. will preside as toastmaster. A dance will follow the banquet.

Following is the tecnnical program for the two days:

"Research on Absorption Oil," Arthur L. Davis, chemist, Empire Refineries, Inc., Okmulgee, Okla.

Discussion by A. G. Maxson, Sun Oil Co., Tulsa.

"Economic Value of Natural Gasoline to Refiner," Dr. E. R. Lederer, vice president of Texas Pacific Coal & Oil Co., Fort Worth, Tex.

Discussion by S. C. Carney, Roxana Petroleum Corp., Tulsa.

"Depreciation and Depletion," by A. B. Morris, appraisal engineer, Chestnut & Smith Corp., Tulsa.

Discussion by R. R. Owens, Natural Gasoline Department, Marland Refining Co.

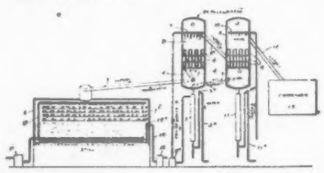
W. R. Boyd, assistant secretary of the American Petroleum Institute, will address the convention on the subject, "Petroleum Trade Associations."

George P. Bunn, assistant superintendent of the gasoline department of the Phillips Petroleum Co., will make an important report covering the work of the Gas Testing Committee of the association. J. H. Boyle, secretary of the Chestnut & Smith Corp., Tulsa, will present the report of the Gas Contract Committee. A meeting of the traffic managers will be held during the convention.

In order that those in attendance from Texas, Louisiana and Arkansas may attend the banquet arrangements have been made with the M. K. & T. Railroad to hold its south bound train from Tulsa until 10:15 p. m.

Recent Patents

1,577,440. Process for Separating Hydrocarbons. Willard C. Averill, Jr., Houston, Tex. Original application filed Oct. 7, 1922, Serial No. 593,084. Divided and this application filed Dec. 10, 1923. Serial No. 679,646. 5 Claims. (Cl. 196—94.)



1. The method of obtaining light hydrocarbons from hydrocarbon oils containing water, which comprises vaporizing the oil to be treated, partially condensing the hydrocarbon vapors and simultaneously condensing the water vapors, subjecting the remaining vapors thereof to previously condensed hydrocarbons of higher boiling point obtained

(Continued on Page 152)

AMONG THE TECHNICAL MEN

Dr. Hobart Cutler Dickinson, chief of the Division of Heat and Power, United States Bureau of Standards, was appointed to that position in 1923.

Dr. H. C. Dickinson

This division covers a field of great breadth, including the study and investigation of the phenomena of heat, the effects of heat upon materials, and the utilization of heat as power, in all of which branches petroleum and its products form an important element.

Graduated from Williams College, A. M., 1902, and from Clark University with degree of Ph.D. in physics in 1910. Doctor Dickinson has since been connected with the Bureau of Standards except for about two years, when he was research manager for the Society of Automotive Engineers, 1921 and 1922.

Previous to the World War, he had been engaged in the standardization of methods of measuring heats of combustion of fuels and determination of the thermodynamic properties of refrigerants, particularly ammonia.

In 1917, he had charge of the design and construction of the first altitude laboratory for studying the behavior of aircraft engines under conditions simulating high altitudes. Also, in 1917, established and took charge of the Automotive Power Plant Section of the Bureau of Standards. During the war, this section contributed much of value to aircraft engine development. Since then investigational and development work on airplane engines has been carried out extensively.

SUBMIT YOUR PROBLEMS

Plant operators are urged to submit their operating problems to the newly created technical department of The Oil and Gas Journal.

This department is headed by C. K. Francis, Ph.D., whose many years of practical experience in refining and the manufacture of natural gasoline has placed him in close touch with the every-day operating problems which are constantly presented to the superintendents, engineers, chemists and others directly connected with plant operations.

Operators are asked to state their questions as fully as possible so that the technical department will have a clear insight into all phases of the problem.

The names of those submitting the questions will not be published.

BARTLES-MAGUIRE CO. REFINERY ADDS UNIT

The Bartles-Maguire Oil Co., jobbing concern of Milwaukee, Wis., has completed the organization which will operate the refinery at East Chicago, Ill. recently purchased from the Consolidated Oil Refining Co. The general offices will continue at Milwaukee, Wis.

William Hildebrandt has been made superintendent of the refinery where the improvement program is already under way. One Jenkins cracking unit will be constructed with equipment for the manufacture of lubricating oils and asphalt as well as skimming. The plant will have a capacity of 3,000 bbls. daily.

SPECIAL PROCESS FOR RECOVERING LUBS

By special processes which have been developed and put into practice, steamships equipped with reciprocating engines, have been able to use their lubricating oils over and over again, thus effecting the utmost economy and efficiency in care of equipment.

Methods of handling lubricating oils on these steamships were described in an article in a recent issue of The Compass, published by the Vacuum Oil Co. among primary essentials for getting the utmost use from lubricants is the absolute segregation of light and heavy oils, which is obtained by the elimination of common distribution pipes and tanks. The article in part follows:

"High quality oils are not destroyed by the service that they perform as bearing or cylinder lubricants. This is illustrated by the continuous service rendered by a correct oil in generator engines equipped with an oil circulation system. The oil, performing its duty thousands of times, is kept in continuous service, with only small quantities added from time to time to make up for losses by leakage. The oil must, however, be kept pure.

Recovery Systems

"The realization that oils may be recovered and rendered fit for repeated use has resulted in added oil economy on many vessels. Where it is desired to recover and purify bearing oils, the first step is to provide means for collecting the used oil in as pure a condition as possible. The engine bed may be fitted with collecting pans to catch oil falling from the cranks and main bearings.

"On other parts of the main and auxiliary machinery small pans or trays may be so placed as to gather all oil drip.

(Continued on Page 152)

The Design of

HUGHES CHROME NICKEL STEEL VALVES

is Rugged

TRADE MARK

HUGHES TOOL COMPANY

Branch Plants
Los Angeles, Calif.
Oklahoma City, Okla.

MAIN OFFICE AND PLANT
HOUSTON, TEXAS

Export Office
New York City, N.Y.

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

GASOLINE AND NAPHTHA

	Apr. 6		Mar. 30		Mar. 23	
OKLAHOMA (Group 3)—						
50-52 450 end point	.09⅛	.09¼	.09¼	.09⅜	.09¼	.09⅜
56-58 450 end point	.09⅝	.09¾	.09⅜	.09⅞	.09½	.09¾
58-60 437 end point (U. S. Motor)	.10	.10⅛	.10⅛		.10	.10⅛
60-62 400 end point	.11⅛	.11¼	.11¼	.11½	.11	.11¼
64-66 375 end point	.12	.12¼	.12¼	.12½	.12	.12¼
68-70 360 end point	.12¾	.12⅞	.12⅝	.13	.12⅞	.13
KANSAS—						
58-60 437 end point (U. S. Motor)	.10¼	.10½	.10½	.10⅝	.10¼	.10½
NORTH TEXAS—						
48-50 450 end point (Naphtha)	.09		.09	.09¼	.09	.09¼
50-52 450 end point (Naphtha)	.09	.09⅛	.09⅛	.09⅜	.09⅛	.09⅜
56-58 450 end point	.09½	.09⅝	.09⅝	.09¾	.09½	.09⅝
58-60 437 end point (U. S. Motor)	.10	.10⅛	.10⅛		.10	
60-62 400 end point	.11¼		.11⅜	.11⅝	.11¼	.11⅜
64-66 390 end point	.11⅝	.11¾	.12⅛	.12⅜	.12	.12¼
64-66 375 end point	.12	.12¼	.12½		.12¼	.12½
68-70 360 end point	.12¾	.12⅞	.12¾	.13	.13	
NORTH LOUISIANA—						
56-58 450 end point	.09⅝	.09¾	.09¾	.10	.09½	.10
58-60 437 end point (U. S. Motor)	.10⅛	.10¼	.10¼	.10½	.10	.10½
60-62 400 end point	.11¼	.11½	.11½	.11⅝	.11¼	.11½
64-66 390 end point	.12	.12¼	.12¼	.12½	.12	.12¼
64-66 375 end point	.12¼	.12½	.12½	.13	.12¼	.12½
ARKANSAS—						
58-60 450 end point	.09¾	.10	.10	.10¼	.09¾	.10
58-60 437 end point (U. S. Motor)	.10⅛	.10¼	.10¼	.10½	.10¼	
64-66 375 end point	.12¼	.12½	.12½	.12¾	.12½	.12¾
ROCKY MOUNTAIN STATES—						
*58-60 437 end point (U. S. Motor)	.12½	.12¾	.13	.13¼	.13	.13¼
PENNSYLVANIA—						
52 Naphtha	.11	.11¼	.11¼	.11½	.11¼	.11½
54 Naphtha	.11¼	.11½	.11½	.11⅝	.11½	.11⅝
56 Naphtha	.11⅝	.12	.12	.12¼	.12	.12¼
58 Naphtha	.12¼	.12½	.12½	.12⅝	.12½	.12⅝
60 Gasoline	.13	.13¼	.13¼	.13½	.13¼	.13½
62 Gasoline	.13½	.13⅝	.13⅝	.14	.13⅝	.14
64 Gasoline	.14	.14¼	.14¼	.14½	.14¼	.14½
66 Gasoline	.16	.16¼	.16¼	.16½	.16¼	.16½
68-70 Gasoline	.19	.19½	.19½	.19¾	.19½	.19¾
CALIFORNIA—						
54-58 437 end point (U. S. Motor) domestic	.12½	.13	.12½	.13	.12½	.13
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 end point (Naphtha)	.09	.09¼	.09	.09¼	.09¼	
56-58 450 end point	.09½	.09¾	.09¾		.09⅝	.09½
58-60 437 end point (U. S. Motor)	.10⅛	.10¼	.10¼	.10½	.10	.10¼
60-62 400 end point	.11¼	.11½	.11¼	.11½	.11	.11¼
64-66 375 end point	.12½	.12¾	.12¼	.12½	.12	
68-70 360 end point	.12¾	.13	.13	.13¼	.12¾	.13

*Colorado points.

NATURAL GASOLINE

	Apr. 6		Mar. 30		Mar. 23	
OKLAHOMA (Group 3)—						
Grade AA, 80-87.9, 375 e.p., rec. 90%	.09	.09¼	.09		.08¾	.09
Grade A, 72-79.9, 375 e.p., rec. 90%	.09	.09¼	.09	.09¼	.09	
Grade BB, 84-92, 375 e.p., rec. 85%	.08½	.08¾	.08¾		.08	.08¼
Grade B, 76-83.9, 375 e.p., rec. 85%	.08⅛	.08¼	.08¼		.08¼	.08½
Grade C, 80-90, 375 e.p., rec. 78%	.08		.08	.08¼	.08	
NORTH TEXAS—						
Grade AA, 80-87.9, 375 e.p., rec. 90%	.09		.09	.09¼	.08¾	.09
Grade A, 72-79.9, 375 e.p., rec. 90%	.09	.09¼	.09	.09¼	.08¾	.09
Grade BB, 84-92, 375 e.p., rec. 85%	.08¼		.08¼	.08⅝	.08¼	.08½
Grade B, 76-83.9, 375 e.p., rec. 85%	.08¼		.08¼	.08⅝	.08¼	.08½
Grade C, 80-90, 375 e.p., rec. 78%	.08		.08	.08¼	.08	
NORTH LOUISIANA—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.09¼	.09½	.09½	.09¾	.09¾	.10
Grade B, 76-83.9, 375 e.p., rec. 85%	.09	.09¼	.09¼	.09½	.09½	.09¾
Grade C, 80-90, 375 e.p., rec. 78%	.08¾	.09	.09	.09¼	.09	.09½
CALIFORNIA—						
78-85 absorption, 360-390 end point	.17	.17½	.17	.17½	.17	.17½
78-84 compression, 350 end point	.17	.17½	.17	.17½	.17	.17½
CHICAGO DISTRICT (Based on Group 3)—						
Grade AA, 80-87.9, 375 e.p., rec. 90%	.09		.09	.09¼	.09	.09¼
Grade A, 72-79.9, 375 e.p., rec. 90%	.09	.09¼	.09	.09¼	.09	.09¼
Grade BB, 84-92, 375 e.p., rec. 85%	.08¼		.08¼	.08½	.08¼	.08½
Grade B, 76-83.9, 375 e.p., rec. 85%	.08¼		.08¼	.08½	.08¼	.08½
Grade C, 80-90, 375 e.p., rec. 78%	.08		.08	.08¼	.08	.08¼

MOTOR NATURAL GASOLINE (BLENDS)

	Apr. 6		Mar. 30		Mar. 23	
OKLAHOMA (Group 3)—						
60-62 450 end point	.09¼	.09½	.09½	.09¾	.09¼	.09¾
64-66 437 end point	.09¼	.09½	.09½	.09¾	.09½	.09¾
68-70 430-435 end point	.09¾	.10	.10	.10¼	.10	.10¼
NORTH TEXAS—						
64-66 437 end point	.09⅝	.09¾	.09¾	.10	.09¾	.10
PENNSYLVANIA—						
*60-62	.12¼	.12½	.12½	.12¾	.12½	.12¾
*64-66	.12½	.12¾	.12¾	.13	.12¾	.13
*66-68	.12¾	.13	.13		.13	
*68-70	.12¾	.13	.13		.13	
CHICAGO DISTRICT (Based on Group 3)—						
60-62 450 end point	.09¼	.09½	.09½	.09¾	.09½	.09¾
64-66 437 end point	.09½	.09¾	.09¾	.10	.09¾	.10

*At Sistersville, W. Va.

BURNING OIL

	Apr. 6		Mar. 30		Mar. 23	
KANSAS—						
41-43 water white Kerosene	.07	.07¼	.07	.07¼	.07	.07¼
OKLAHOMA (Group 3)—						
41-43 water white Kerosene	.06¾	.06⅞	.06⅝	.06¾	.06½	.06¾
42-44 water white Kerosene	.07⅛	.07¼	.07⅛	.07¼	.07	.07¼
NORTH LOUISIANA—						
41-43 prime white Kerosene	.07	.07¼	.07	.07¼	.07¼	.07½
ROCKY MOUNTAIN STATES—						
*40-41 water white Kerosene	.09⅝	.09¾	.09⅝	.09¾	.09½	.09¾
NORTH TEXAS—						
41-43 water white Kerosene	.07	.07⅛	.07		.06¾	.07
ARKANSAS—						
41-43 water white Kerosene	.07¼	.07½	.07¼	.07½	.07¼	.07½
PENNSYLVANIA—						
43 Kerosene prime white	.08¼	.08½	.08	.08¼	.08	.08¼
45 Kerosene water white	.08¾	.09	.08⅝	.08⅞	.08½	.08¾
46 Kerosene water white	.09½	.09⅝	.09⅜	.09½	.09⅜	.09½
47 Kerosene water white	.10	.10¼	.09⅞	.10	.09⅞	.10
34 Neutral	.08	.08¼	.07¾	.08	.07¾	.08
34 Sundebloom Neutral	.09	.09¼	.08¾	.09	.08¾	.09
36 Miners' Neutral	.07	.07¼	.07	.07¼	.07	.07¼
300 Mineral Seal	.07¾	.08	.07¾	.08	.07¾	.08
CALIFORNIA—						
38-40 water white (high burning test)	.09	.10	.09	.10	.09	.10
Engine distillate, 43-45 445 end point	.11	.11½	.11	.11½	.11	.11½
Engine distillate, 42-44 450 end point	.10¾	.11	.10¾	.11	.10¾	.11
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white Kerosene	.06¾	.07	.06⅝	.06¾	.03⅝	.06¾
42-44 water white Kerosene	.07⅛	.07¼	.07	.07⅛	.07	.07⅛

*Colorado points.

FUEL OILS

	Apr. 6		Mar. 30		Mar. 23	
KANSAS—						
24-26 Fuel Oil	1.50	1.55	1.40	1.45	1.40	1.45
32-36 Gas Oil	.04¼	.04⅜	.04⅛	.04¼	.04⅛	.04¼
38-40 Distillate	.04½	.04⅝	.04⅜	.04½	.04⅜	.04½
OKLAHOMA (Group 3)—						
Below 22 Fuel Oil (sellers' cars)	1.30	1.35	1.25	1.27½	1.20	1.22½
22-26 Fuel Oil (sellers' cars)	1.35	1.37½	1.27½	1.32½	1.22½	1.25
24-26 Fuel Oil (sellers' cars)	1.40	1.45	1.35		1.30	1.32½
26-30 Fuel Oil (sellers' cars)	1.45	1.50	1.40	1.45	1.35	1.40
28-30 Fuel Oil (sellers' cars)	1.55	1.60	1.45	1.50	1.45	1.50
32-36 Gas Oil (dark)	.04⅛	.04¼	.04	.04⅛	.04	.04¼
32-36 Gas Oil (light)	.04⅜	.04½	.04⅛	.04¼	.04	.04¼
36-38 Distillate	.04⅜	.04½	.04¼	.04⅜	.04¼	.04⅜
38-40 Straw Distillate	.04½	.04⅝	.04⅜	.04½	.04⅜	.04½
NORTH TEXAS—						
24-26 Fuel Oil (sellers' cars)	1.55	1.60	1.45	1.50	1.40	1.45
32-36 Gas Oil (dark)	.04⅛		.04		.04	
32-36 Gas Oil (light)	.04¼	.04⅜	.04	.04⅛	.04	.04⅛
38-40 Straw Distillate	.04⅜	.04½	.04¼	.04⅜	.04¼	.04⅜
NORTH LOUISIANA—						
18-20 Fuel Oil	1.20	1.25	1.15	1.20	1.20	1.25
32-36 Gas Oil	.04¼	.04⅜	.04⅛	.04¼	.04⅛	.04¼
ARKANSAS—						
38-40 Distillate	.04½		.04½		.04¼	.04½
32-36 Gas Oil	.04¼	.04⅜	.04	.04¼	.04	
16-20 Refinery Fuel Oil	1.20	1.25	1.15	1.20	1.10	1.15
GULF COAST (South Texas)—						
Gas Oil	.05	.05¼	.05	.05¼	.05	.05¼
Fuel Oil	1.65	1.70	1.65	1.70	1.65	1.70
PENNSYLVANIA—						
30-34 Fuel Oil	.05¾	.06	.05¾	.06	.05¾	.06
36-40 Fuel Oil	.06	.06¼	.06	.06¼	.06	.06¼
CALIFORNIA—						
33-36 Distillate	.05¼	.05½	.05¼	.05½	.05¼	.05½
27-35 Distillate	.04½	.05	.04½	.05	.04½	.05
15-20 Fuel Oil (at tidewater)	1.00	1.04	1.00	1.04	1.00	1.04
27 plus Diesel	1.15	1.19	1.15	1.19	1.15	1.19
CHICAGO DISTRICT (Based on Group 3)—						
24-26 Fuel Oil (sellers' cars, Group 3)	1.40	1.45	1.30	1.35	1.30	1.32½
22-26 Fuel Oil (sellers' cars)	1.37½	1.40	1.25	1.30	1.25	1.27½
18-22 (El Dorado)	1.25	1.27½	1.20	1.25	1.22½	1.25
18-20 (Smackover)	1.07½	1.10	1.10	1.15	1.12½	1.15
32-36 Gas Oil	.04¼	.04⅜	.04⅛	.04¼	.04	.04¼
36-38 Distillate	.04⅜	.04½	.04⅛	.04¼	.04¼	.04⅜
38-40 Straw Distillate	.04⅝	.04¾	.04½	.04⅝	.04⅜	.04½

LUBRICATING OILS AND WAX

	Apr. 6		Mar. 30		Mar. 23	
OKLAHOMA (Group 3)—						
70-80 vis., 2½ color, 20-25 cold test	.06	.07	.06	.07	.06	.07
100 vis., 3 color, 20-25 cold test	.06½	.07	.06½	.07	.06½	.07
100 vis., 2 color, 20-25 cold test	.07	.07½	.07	.07½	.07	.07½
150 vis., 4 color, 20-25 cold test	.09¼	.09¾	.09¼	.09¾	.09¼	.09¾
150 vis., 3 color, 20-25 cold test	.09½	.10	.09½	.10	.09½	.10
180 vis., 4 color, 23-28 cold test	.10	.10½	.10	.10½	.10	.10½
180 vis., 3 color, 23-28 cold test	.10¼	.10½	.10¼	.10¾	.10¼	.10¾
200 vis., 4 color, 23-28 cold test	.11	.11½	.11	.11½	.11	.11½
200 vis., 3 color, 23-28 cold test	.11¼	.11½	.11	.11½	.10½	.11½
220 vis., 4 color, 25-30 cold test	.14	.14½	.14	.14½	.14	.14½
220 vis., 3 color, 25-30 cold test	.14½	.15	.14½	.15	.14½	.15
240 vis., 4 color, 25-30 cold test	.14	.14½	.14	.14½	.14	.14½
240 vis., 3 color, 25-30 cold test	.14½	.15	.14½	.15	.14½	.15
280 vis., 4 color, 25-30 cold test	.15½	.16	.15½	.16½	.15½	.16½
280 vis., 3 color, 25-30 cold test	.16½	.17	.16¼	.17	.16¼	.17
180 vis., 5 color, 23-28 cold test	.09¾	.10¼	.09¾	.10¼	.09¾	.10¼
200 vis., 5 color, 23-28 cold test	.10¾	.11¼	.10¾	.11¼	.10¾	.11¼
220 vis., 5 color, 25-30 cold test	.14	.14½	.14	.14½	.14	.14½
240 vis., 5 color, 25-30 cold test	.13	.14	.13	.14	.13	.14
280 vis., 5 color, 25-30 cold test	.15½	.16	.15½	.16	.15½	.16
Cylinder Stocks:						
180-200 vis., S. R. green, 40-45 cold test	.08½	.11	.08½	.11	.08½	.11
190-200 vis., S. R. green, 40-45 cold test	.08	.08½	.08	.08½	.08	.08½
170-190 dark green, 40-45 cold test	.06	.06½	.06	.06½	.06	.06½
190-200 vis. @ 210 "D" Bright Stock	.33	.35	.33	.35	.33	.35
200-210 vis. @ 210 "E" Bright Stock	.30	.31	.30	.31	.30	.31
150 vis. @ 210 "E" Bright Stock	.27	.28	.27	.28	.27	.28
150 vis. @ 210 "D" Bright Stock	.28	.31	.28	.31	.28	.31
Waxes:						
122-124 White Crude Scale Wax	.04¾	.05	.04¾	.05	.04¾	.05
PENNSYLVANIA—						
150, 3 color	.21½		.21½		.22	
180, 3 color	.26		.26		.26	

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

200, 3 color	.27¾		.27¾		.28	
220, 3 color	.30		.30		.30	
600, steam refined	.15¾		.15¾		.16½	
635, steam refined	.19½		.19½		.20	
650, steam refined	.21		.21		.21½	
600, Pennsylvania flash	.27		.27		.27	
630 Pennsylvania flash	.35		.35		.36	
*550, E filtered	.19½		.20¾		.20¾	
600, E filtered	.20½		.20½		.21¼	
*600, E filtered	.21½		.21½		.22¾	
600, D filtered	.27½		.27½		.27½	
550, E filtered	.18½	.18¾	.20		.20	
550, D filtered	.22¼	.22½	.22¼		.22¼	
Pennsylvania Bright Stock	.37		.37		.37½	
122-124 White Crude Scale Wax	.05¾	.05½	.05⅝	.05½	.05⅝	.05½
†124-126 White Crude Scale Wax	.05½	.05⅝	.05½	.05⅝	.05½	.05⅝

*At Warren, Pa. †At New York City.

GULF COAST (South Texas)—						
Zero Black	.06	.07	.06	.07	.06	.07
No. 2 color, 100 vis., pale oil	.07½	.08	.07½	.08	.07½	.08
No. 2½ color, 150 vis., pale oil	.10	.10½	.10	.10½	.10	.10½
No. 3 color, 200 vis., pale oil	.11	.11½	.11	.11½	.11	.11½
No. 3½ color, 300 vis., pale oil	.13	.13½	.13	.13½	.12½	.14
No. 3¾ color, 500 vis., pale oil	.15	.15½	.15	.15½	.15½	.16
No. 4 color, 750 vis., pale oil	.18½	.19	.18½	.19	.18½	.19
No. 1½ plus color, 150 vis., pale filtered	.22		.22		.22	
No. 2 plus color, 200 vis., pale filtered	.23½		.23½		.23½	
No. 2 color, 300 vis., pale filtered	.27½		.27½		.27½	
No. 2½ color, 500 vis., pale filtered	.31½		.31½		.31½	
No. 2½ color, 750 vis., pale filtered	.41½		.41½		.41½	
No. 5 to 6 color, 200 vis., red oil	.09½	.10	.09½	.10	.09½	.10
No. 5 to 6 color, 300 vis., red oil	.11½	.12	.11½	.12	.11½	.12
No. 5 to 6 color, 500 vis., red oil	.13	.13½	.13	.13½	.13	.13½
No. 5 to 6 color, 750 vis., red oil	.17	.18	.17	.18	.17	.18
CALIFORNIA—						
130 pale, 2½-3 color	.10	.11½	.10	.11½	.10	.11½
200 vis., 2½-3 color	.13½	.14½	.13½	.14½	.13½	.14½
300 vis., 3 -3½ color	.15	.16	.15	.16	.15	.16
350 vis., 3½-4 color	.16½	.17½	.16½	.17½	.16½	.17½
400 vis., 3½-4 color	.18	.19	.18	.19	.18	.19
Red Neutrals:						
200 vis., 4½-5 color	.12	.13	.12	.13	.12	.13
300 vis., 5 -6 color	.13	.14	.13	.14	.13	.14
400 vis., 5 -6 color	.15	.16	.15	.16	.15	.16
500 vis., 4½-5 color	.18	.19	.18	.19	.18	.19
500 vis., 6 -6½ color	.16	.17	.16	.17	.16	.17
600 vis., 6½ plus color	.17	.18	.17	.18	.17	.18

Note: Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK DOMESTIC MARKET

Bayonne Refinery Prices:	Apr. 6	Mar. 30	Mar. 23
U. S. Motor Gasoline, 58-60 437	.13	.13	.13
*Bunker Oil, 14-16 Be.	1.75	1.75	1.75
*Diesel Oil, New York City	2.30	2.30	2.30
Furnace Oil, New York City	.10	.10	.10
Gas Oil, 28 plus	.06	.06	.06
41-43 Kerosene prime white	.08½	.08½	.08½

*Lighterage 6.5c a barrel extra.

NEW YORK EXPORT PRICES

Motor Gasoline.	Apr. 6	Mar. 30	Mar. 23
58-60 Be. gravity, in cases	.27.90	.27.90	.27.90
Standard white Kerosene, in cases	.18.15	.18.40	.18.40
Water white Kerosene, in cases	.19.65	.19.90	.19.90
Export Gasoline, 64-66 Be.	.16	.16	.16
†Lubricating Oils (in bulk):			
Cylinder Stock, light filtered, 60 s.r.	.29	.29	.29
No. 5 Bright Stock, .897 spec. grav.	.40	.40	.40
No. 1 White Neutral, .878 spec. grav.	.35	.35	.35
Pale Oil, "25" .898 spec. grav.	.12	.12	.12
Pale Oil ,"28" .892 spec. grav.	.07½	.07½	.07½
No. 3 red oil, 160 vis., 7 color	.10¾	.10¾	.10¾
No. 2 red oil, .903 spec. grav.	.11½	.11½	.11½
No. 1 red oil, .905 spec. grav., 265 vis.	.13	.13	.13
Polar red oil, .903 spec. grav., 295 vis.	.13½	.13½	.13½
Paraffin Wax:			
120-122 a.m.p., per lb.	.06⅛	.06⅛	.06⅛
125-127 a.m.p., per lb.	.06¼	.06¼	.06¼
130-132 a.m.p., per lb.	.06½	.06½	.06½
135-137 a.m.p., per lb.	.07⅛	.07⅛	.07⅛
Petrolatum, in bbls., car load lots, per lb.:			
Amber	.03⅜	.03⅜	.03⅜
Light amber	.03⅝	.03⅝	.03⅝
Cream	.06	.06	.06
Lily white	.08	.08	.08
Snow white	.09½	.09½	.09½

†All lub prices in barrels.

LOS ANGELES EXPORT PRICES

	Apr. 6		Mar. 30		Mar. 23	
Kerosene water white	.05	.05½	.05	.05½	.05	.05½
U. S. Motor Gasoline, 54-56 437 e.p.	.10	.10½	.10	.11½	.10	.11½

CRUDE OIL PRICES

OKLAHOMA, KANSAS AND NORTH TEXAS

***Prairie Oil & Gas Co.**

(Oklahoma, Kansas and North and East Central Texas.)

28° to 28.9°	$1.40
29° to 29.9°	1.48
30° to 30.9°	1.56
31° to 31.9°	1.64
32° to 32.9°	1.72
33° to 33.9°	1.80
34° to 34.9°	1.88
35° to 35.9°	1.96
36° to 36.9°	2.04
37° to 37.9°	2.12
38° to 38.9°	2.20
39° to 39.9°	2.28
40° to 40.9°	2.36
41° to 41.9°	2.44
42° to 42.9°	2.52
43° to 43.9°	2.60
44° to 44.9°	2.68
45° to 45.9°	2.76
46° to 46.9°	2.84
47° to 47.9°	2.92
48° to 48.9°	3.00
49° to 49.9°	3.08
50° to 50.9°	3.16
51° to 51.9°	3.24
52° and above	3.32

*Other major purchasers except as noted below.

Champlin Refining
(Garber and Tonkawa)

Schedule based on Prairie Oil & Gas Co. paying 10 cents additional for each grade of crude above 38° gravity.

Humble Oil & Refining Co.

(North and East Central Texas, Ranger, Mexia, Powell, Richland, Wortham, Currie, Moran, Big Lake and Lytton (Springs)

Below 25°	$1.08
25° to 25.9°	1.16
26° to 26.9°	1.24
27° to 27.9°	1.32

Other grades same as Prairie Oil & Gas Co.

Magnolia Petroleum Co.

(Oklahoma, Kansas and North and East Central Texas, except Corsicana heavy, and Lytton Springs of South Central Texas.)

Below 28°	$1.20

Other grades same as Prairie Oil & Gas Co.

Iatan	$1.15
Corsicana heavy	1.15

(Panola County)

34° to 34.9°	1.70
35° to 37.9°	1.85
38° and above	2.00

Texhoma Oil & Refining Co.
(Wichita Falls, Texas, District.)

Below 32°	$1.88
32° to 32.9°	1.94
33° to 33.9°	2.00
34° to 34.9°	2.06
35° to 35.9°	2.12
36° to 36.9°	2.18
37° to 37.9°	2.25
38° to 38.9°	2.30
39° to 39.9°	2.36
40° to 40.9°	2.42
41° to 41.9°	2.48
42° to 42.9°	2.54
43° to 43.9°	2.60
44° and above	2.69

Gypsy Oil Co.
(Bristow, Glenn Pool, Morris and Perryman, Okla.)

25° to 25.9°	$1.16
26° to 26.9°	1.24
27° to 27.9°	1.32

Other grades same as Prairie Oil & Gas Co.

TEXAS PANHANDLE

Kay County Gas Co.
Magnolia Petroleum Co.

Below 31°	$1.15
31° to 33.9°	1.30
34° to 36.9°	1.50
37° to 39.9°	1.65
40° and above	1.70

GULF COAST

***Humble Oil & Refining Co.**

Grade A	$1.50
Grade B—	
Below 25°	1.25
25° to 25.9°	1.30
26° to 26.9°	1.35
27° to 27.9°	1.40
28° to 28.9°	1.45
29° to 29.9°	1.50
30° and above	1.55
Sour Lake (36° gravity) (The Texas Company)	1.79
Boling	1.50
Piedras Pintas (deep sand)	1.75
High Island	1.25

*And other major purchasers, including The Texas Company, and the Sun Oil Co. High Island crude posted by the Sun Oil Co.

SOUTH CENTRAL AND SOUTHWEST TEXAS

***Magnolia Petroleum Co.**

Luling (contract)	$1.20
Mirando (Webb, Jim Hogg and Zapata Counties)	1.15
Rockdale-Minerva (Milam County)	1.25
Thrall	1.00
Callihan (Live Oak and McMullen Counties)	1.65
§Lockhart (Lytton Springs)	...
§Somerset	...

*Texpata Pipeline Co. also posts in Mirando Field paying same prices as Magnolia Petroleum Co. Crown Central Petroleum Co. pays $1.20 for Mirando crude.

§Lockhart and Somerset prices same as for North and East Central Texas. Lockhart posted by Magnolia Petroleum Co. and Humble Oil & Refining Co. Somerset is posted by Grayburg Oil Co.

ARKANSAS AND NORTH LOUISIANA

Standard Oil Co. of Louisiana

Caddo below 32°	$1.85
32° to 34.9°	2.00
35° to 37.9°	2.10
38° and above	2.20
Homer below 31°	1.60
31° to 32.9°	1.75
33° to 34.9°	1.85
35° and above	1.95
Haynesville below 33°	1.75
33° and above	1.85
El Dorado below 33°	1.75
33° and above	1.85
Bull Bayou, 32° to 34.9°	1.70
35° to 37.9°	1.85
38° and above	2.00
Cotton Valley	1.10
DeSoto	2.05
Crichton	1.85
Bellevue	1.50
Smackover, below 24°	1.00
24° to 24.9°	1.25
25° to 25.9°	1.30
26° to 26.9°	1.35
27° and above	1.40
*Stephens, Ark., below 26°	1.30
26° and above	1.50
**Calion (East El Dorado)	.95
§Urania	1.40

Other companies posting in these fields are: Gulf Pipe Line Co.; Atlantic Oil Producing Co. in Homer, Haynesville and Smackover; The Texas Company in Caddo, Bull Bayou, DeSoto, Crichton and Smackover.

*Posted by the Atlantic Oil Producing Co.
**Posted by the Gulf Pipe Line Co.
§Posted by the Louisiana Oil Refining Corp.

ROCKY MOUNTAIN STATES

Ohio Oil Co.-Midwest Refining Co.

Rock Creek (Wyo.)	$2.00
Salt Creek—	
29° to 29.9°	1.48
30° to 30.9°	1.56
31° to 31.9°	1.64
32° to 32.9°	1.72
33° to 33.9°	1.80
34° to 34.9°	1.88
35° to 35.9°	1.96
36° to 36.9°	2.04
37° and above	2.12
Big Muddy	2.00
Mule Creek	1.50
Grass Creek, light	2.15
Grass Creek, heavy	.90
Elk Basin	2.15
Lance Creek	2.15
Osage	2.15
Lost Soldier (contract)	1.10
Greybull-Torchlight	1.90
Hamilton Dome	1.35
Cat Creek (Mont.)	2.15
Sunburst (Mont.)	1.15
Florence (Colo.)	1.35
Artesia	1.70
Hogback (N. M.)	2.20

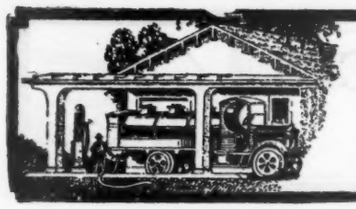
Note: Salt Creek, Osage, Cat Creek and Hogback posted by Midwest Refining Co., and the remainder by the Ohio Oil Co. Both companies post Grass Creek light and Elk Basin.

EASTERN STATES

Joseph Seep Purchasing Agency

Penna Grade Oil in New York Transit Lines (New York)	3.65
Bradford District Oil in National Transit Lines (Pennsylvania)	3.65
Penna Grade Oil in National Transit Lines (Pennsylvania)	3.55
Penna Grade Oil in Southwest Pa. Pipe Lines (Pennsylvania)	3.55
Penna Grade Oil in Eureka Pipe Line Lines (West Virginia)	3.50

(Continued on Page 144)



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns, Apr. 6.

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

Main Service Station Price

	Gasoline			Kero.
	Tank wagon	Service station	Incldg tax of	Tank wagon
Chicago Dist.—				
†Less than 10 gals.	17.0	19.0	...	12.0

Tank wagon prices on April 19, 1922; g. up 1½c; May 8, g. up 1c; June 27, g. and k. up 1c; July 19, g. down 2c, k. down 1c; Oct. 10, g. down 2c; Oct. 21, g. down 1c; Feb. 5, 1923, g. up 1c; Feb. 20, g. up 1c; Aug. 14, g. down 6.6c; Oct. 4, k. down 1½c; Nov. 10, g. down 1.4c; Dec. 20, g. up 2c; Jan. 12, 1924, g. up 2c, k. up 1c; Feb. 5, g. up 2c, k. 1c; July 18, g. down 1c; July 30, g. and k. down 1c; Sept. 12, g. down 2c; Jan. 23, 1925, g. up 1c; Jan. 26, g. up 1c; Jan. 31, g. up 1c; Feb. 12, g. up 2c, k. up 1c; April 19, g. down 1c; July 14, g. up 1c; Aug. 25, g. down 2c, k. down 1c; Sept. 1, g. down 1c; Feb. 4, 1926, g. up 1c, k. up 1c.

Decatur, Ill.	17.0	19.2	...	12.5
East St. Louis	16.1	18.35	...	11.6
Joliet	17.4	19.4	...	12.7
Peoria	17.2	19.2	...	12.7
Quincy	17.2	19.2	...	12.3
Davenport, Ia.	19.5	21.5	2.0	12.9
Des Moines	19.5	21.5	2.0	12.9
Keokuk	19.5	21.5	2.0	12.9
Sioux City	19.5	21.5	2.0	21.5
Duluth, Minn.	20.5	22.5	2.0	13.6
Minneapolis	20.2	22.2	2.0	13.6
La Crosse, Wis.	20.2	22.2	2.0	13.1
Milwaukee	19.1	21.1	2.0	12.3
Madison	19.3	21.3	2.0	12.5
Detroit, Mich.	19.8	21.8	2.0	13.2
Grand Rapids	19.7	21.7	2.0	13.1
Saginaw	19.9	21.9	2.0	13.3
Evansville, Ind.	20.0	22.0	3.0	12.5
Fort Wayne	20.4	22.4	3.0	12.9
Indianapolis	20.2	22.2	3.0	12.7
South Bend	20.4	22.4	3.0	12.9
Fargo, N. D.	20.9	22.9	1.0	15.6
Huron, S. D.	19.0	21.0	3.0	14.1
Sioux Falls	19.0	21.0	3.0	13.6
*K. C., Mo.	19.9	21.9	3.0	11.3
*Springfield	19.8	21.8	3.0	12.2
*St. Louis	18.6	20.9	2.6	12.0
*St. Joseph	19.0	21.0	2.5	11.9
Wichita, Kan.	18.3	@0.3	2.0	11.8
Bartlesville, Ok.	17.4	19.4	3.0	10.9

*State tax is 2c. Remainder is city tax.
†Quantity price on more than 100 gallons, 16.0.

The following monthly rebate system is effective on tank wagon schedules throughout the territory of Standard Oil Co. of Indiana: Over 750 gallons, ½c; over 2,000 gallons, ¾ cent; over 3,000 gallons, 1 cent; over 6,000 gallons, 1½ cents; over 10,000 gallons, 2 cents. If quantity bought during the year is equal to 12 times the monthly agreed purchases the discount will be paid or credited on the entire quantity less monthly payments. Service station customers will receive discount of 1 cent a gallon on purchases amounting to 200 gallons a month or 2,400 gallons a year; and 2 cents a gallon on 600 gallons a month or 7,200 gallons a year.

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incldg tax of	Tank wagon
Atlantic City	16.0	....	...	15.0
Newark, N. J.	16.0	18.0	...	15.0
Annapolis, Md.	18.0	....	2.0	15.0
Baltimore	18.0	21.0	2.0	15.0
Cumberland	18.0	21.0	2.0	15.0
Washington	18.0	21.0	2.0	15.0
Danville, Va.	21.5	....	4.5	15.0
Norfolk	21.5	24.5	4.5	15.0
Petersburg	21.5	....	4.5	15.0
Richmond	21.5	24.5	4.5	15.0
Roanoke	21.5	24.5	4.5	15.0
Charleston, W. Va.	20.0	23.0	3.5	15.0
Keyser	20.0	....	3.5	15.0
Parkersburg	20.0	23.0	3.5	15.0
Wheeling	20.0	23.0	3.5	15.0
Charlotte, N. C.	21.0	24.0	4.0	15.0
Hickory	21.0	....	4.0	15.0
Mt. Airy	21.0	....	4.0	15.0
Salisbury	21.0	....	4.0	15.0
Charleston, S.C.	22.0	25.0	5.0	15.0
Columbia	22.0	25.0	5.0	15.0

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incldg tax of	Tank wagon
Atlanta, Ga.	23.0	26.0	3.5	17.0
Augusta	23.0	26.0	3.5	17.0
Macon	23.0	26.0	3.5	17.0
Savannah	20.0	23.0	3.5	15.0
Birm'gham, Ala	20.0	23.0	2.0	16.5
Mobile	19.0	22.0	2.0	15.0
*Montgomery	21.0	24.0	3.0	17.5
Clarksdale, Miss	21.0	24.0	4.0	14.5
Jackson	21.0	24.0	4.0	13.5
Natchez	20.5	23.5	4.0	14.0
Vicksburg	20.5	23.5	4.0	14.0
Jack'ville, Fla.	21.0	24.0	4.0	15.0
Miami	23.0	26.0	4.0	16.5
Pensacola	21.0	24.0	4.0	15.5
Tampa	21.0	24.0	4.0	15.0
Covington	23.0	26.0	5.0	16.0
Louisville	22.0	26.0	5.0	15.0
Lexington, Ky.	22.0	25.0	5.0	16.0

*In addition to the state tax of 2 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and ½ cent on kerosene.

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incldg tax of	Tank wagon
*Pittsburgh, Pa.	18.0	23.0	...	16.0
*Philadelphia	18.0	23.0	...	16.0
*Scranton	18.0	23.0	...	16.0
*Allentown	18.0	23.0	...	16.0
Altoona	18.0	23.0	...	16.0
*Erie	18.0	23.0	...	16.0
Dover, Del.	20.0	23.0	2.0	16.0
Wilmington	20.0	23.0	2.0	16.0
Spring'fd, Mass.	19.0	21.0	...	16.0
Worcester	19.0	21.0	...	16.0
Boston	19.0	22.0	...	16.0
Providence, R.I.	20.0	23.0	1.0	16.0
Hartford, Conn.	21.0	24.0	3.0	15.0
New Haven	21.0	24.0	3.0	16.0

*Pennsylvania tax of 2 cents is collected by the dealer and paid by him direct to the State.

SOUTHWESTERN DISTRICT

***Magnolia Petroleum Co.**

	Gasoline			Kero.
	Tank wagon	Service station	Incldg tax of	Tank wagon
Dallas, Tex.	15.0	17.0	1.0	11.0
Fort Worth	14.0	16.0	1.0	11.0
Houston	16.0	18.0	1.0	12.0
San Antonio	15.0	17.0	1.0	11.0
El Paso	18.0	20.0	1.0	13.0
Texarkana	17.5	20.5	1.0	13.0
Muskogee, Ok.	17.0	20.0	3.0	10.0
Oklahoma City	17.0	20.0	3.0	12.0
Tulsa	17.0	20.0	3.0	12.0
Little Rock	18.5	21.5	4.0	14.5
Ft. Smith, Ark.	18.5	21.5	4.0	14.5

*The following is the schedule of discounts on gasoline adopted by the Magnolia Petroleum Co. in Texas sales and the discounts are grade according to gallonage: Over 750 gallons a month, ½ cent; over 2,000 gallons, ¾ cent; over 3,000 gallons, 1 cent; over 4,500 gallons, 1¼ cents; over 6,000 gallons, 1½ cents; over 8,000 gallons, 1¾ cents; over 10,000 gallons, 2 cents. If the quantity bought during the year is 12 times the monthly agreed purchases, the discount will be paid or credited on the entire quantity for the year less any monthly purchases.

The schedule on service station deliveries is: Over 200 gallons a month, 1 cent; over 300 gallons a month, 1¼ cents; over 400 gallons, 1½ cents; over 500 gallons, 1¾ cents; over 600 gallons, 2 cents. The same rule applies for annual purchases as in the tank wagon discounts.

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incldg tax of	Tank wagon
All Ohio points	21.0	23.0	2.0	14.0

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incldg tax of	Tank wagon
Denver, Colo.	20.0	20.0	2.0	15.5
Pueblo	19.0	19.5	2.0	15.5
Casper, Wyo.	20.5	22.5	2.5	14.0
Cheyenne	21.5	23.5	2.5	15.5
Butte, Mont.	22.0	22.0	2.0	17.0
Helena	24.0	26.0	2.0	18.0
Salt Lake, Utah	25.0	27.0	3.5	18.0
Boise, Idaho	26.0	28.0	3.0	20.0
Albuquerque, N. Mex.	24.5	27.5	3.0	17.5

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incldg tax of	Tank wagon
Albany, N. Y.	19.0	....	...	16.0
*New York	19.0	....	...	16.0
Buffalo	19.0	....	...	16.0
Rochester	17.0	....	...	16.0
Syracuse	18.0	....	...	16.0
Boston, Mass.	19.0	....	....	....
Providence, R.I.	20.0	....	1.0	....
Augusta, Me.	22.0	....	3.0	16.0
Manchester, N. H.	21.0	....	2.0	16.0
Burlington, Vt.	21.0	....	2.0	16.0

*Price in steel barrels.
Note: Standard Oil Co. of New York does not generally quote service station price in its territory. In most cases the service station price is 2 or 3 cents higher than tank wagon price.

PACIFIC COAST DISTRICT

Standard Oil Co. (California)

	Gasoline			Kero.
	Tank wagon	Service station	Incldg tax of	Tank wagon
San Francisco	15.0	22.0	2.0	15.5
Los Angeles	16.5	20.5	2.0	15.5
Fresno	18.5	22.5	2.0	17.5
Reno, Nev.	23.5	27.5	4.0	19.0
Portland, Ore.	19.0	23.0	3.0	16.5
Seattle, Wash.	18.0	22.0	2.0	16.5
Spokane	22.0	26.0	2.0	20.5
Tacoma	18.0	22.0	2.0	16.5
Phoenix, Ariz.	25.0	28.0	3.0	21.5

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incldg tax of	Tank wagon
Omaha	18.25	20.25	2.0	12.5
Crawford	20.0	.....	2.0	13.25
McCook	20.75	22.75	2.0	14.0
Norfolk	19.75	21.75	2.0	13.0
North Platte	20.75	22.75	2.0	13.75
Scottsbluff	20.25	22.75	2.0	13.25

CALIFORNIA

***Standard Oil Co.-Union Oil Co.**

Gravity—	Long Beach Huntington Beach Richfield Brea-Olinda Rosecrans-Dom'guez Torrance-Inglewood	Whittier La Habra Montebello	Kern River Newhall-McKittrick Midway-Sunset Elk Hills Lost Hills Belridge	Coyote	Santa Fe Springs	Coalinga	Wheeler Ridge	Santa Maria Ventura Salt Lake
14°	.85	.85	.75	.85	....	.75	.75	.85
15°	.87	.85	.75	.85	....	.75	.75	.85
16°	.90	.85	.75	.85	....	.75	.75	.85
17°	.94	.85	.75	.85	....	.75	.75	.85
18°	.98	.86	.76	.86	....	.75	.75	.85
19°	1.04	.87	.76	.87	....	.75	.75	.85
20°	1.10	.89	.82	.90	.89	.79	.78	.90
21°	1.16	.91	.90	.98	.91	.86	.81	.97
22°	1.22	.94	1.00	1.06	.94	.93	.85	1.04
23°	1.28	.97	1.11	1.14	.97	1.00	.89	1.11
24°	1.34	1.01	1.22	1.22	1.02	1.07	.93	1.18
25°	1.40	1.05	1.33	1.30	1.08	1.14	.97	1.25
26°	1.46	1.09	1.44	1.38	1.16	1.21	1.01	1.32
27°	1.52	1.13	1.55	1.46	1.24	1.28	1.06	1.39
28°	1.58	1.17	1.66	1.54	1.32	1.35	....	1.46
29°	1.64	1.21	1.77	1.62	1.40	1.42	....	1.53
30°	1.70	1.25	1.88	1.70	1.48	1.49	....	1.60
31°	1.76	....	1.99	....	1.60	1.56	....	1.67
32°	1.84	....	2.10	....	1.72	1.63	....	1.73
33°	1.92	....	2.21	....	1.84	1.70	....	1.79
34°	2.00	....	2.32	....	1.96	1.77	....	1.85
35°	2.08	....	....	....	2.08	1.84	....	1.92
36°	2.16	....	....	....	2.16	....	....	....
37°	2.24	....	....	....	2.24	....	....	....
38°	2.34	....	....	....	2.34	....	....	....
39°	2.44	....	....	....	2.44	....	....	....
40°	2.54	....	....	....	....	....	....	....
41°	2.64	....	....	....	....	....	....	....
42°	2.74	....	....	....	....	....	....	....

*Column 2—Long Beach and Huntington Beach crudes, 14 to 32 degrees, inclusive; Richfield and Brea-Olinda, 14 to 30 degrees; Torrance and Inglewood, 14 to 28; Dominguez, 24 to 42 degrees. Rosecrans crude ranges from 14 to 42 degrees, but only Union Oil Co. posts below 24 degrees.
Column 3—Whittier and La Habra crudes, 14 to 22 degrees; Montebello, 14 to 30 degrees.
Column 4—Kern River, Newhall and McKittrick, 14 to 19 degrees; Midway-Sunset and Elk Hills, 14 to 33 degrees; Lost Hills and Belridge, 14 to 34 degrees.
Column 6—Santa Fe Springs. Only Union Oil Co. posts below 24 degrees.
Column 9—Salt Lake, 14 to 19 degrees, inclusive; Santa Maria, 14 to 30 degrees; Ventura, 14 to 35 degrees. Posted only by Union Oil Co.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incldg tax of	Tank wagon
*New Orleans	17.0	20.0	3.0	13.5
Alexandria	16.5	19.5	2.0	14.5
Baton Rouge	15.5	18.5	2.0	13.0
LaFayette	17.5	19.5	2.0	14.0
Lake Charles	17.0	20.0	3.0	14.5
Shreveport, La.	15.5	18.5	3.0	13.5
Memphis, Tenn.	18.0	21.0	3.0	14.5
Chattanooga	18.5	21.5	3.0	15.0
Knoxville	19.0	22.0	3.0	15.5
Nashville	18.5	21.5	3.0	15.0
Bristol	19.5	22.5	3.0	15.0
Little Rock, Ark	18.5	21.5	4.0	14.5

*Tax of 3 cents includes city tax of 1 cent.

TANK WAGON PRICE CHANGES

April 1.—Standard Oil Co. of Kentucky advanced tank wagon and service station prices of gasoline 1 cent in Mississippi to cover an increase in the State gasoline tax from 3 to 4 cents.

April 6—Atlantic Refining Co. advanced gasoline tank wagon and service station prices 1 cent in Pennsylvania and Delaware.

PRAIRIE SHIPMENTS IN MARCH SHOW INCREASE

While the Prairie Pipe Line Co.'s deliveries and shipments in March were larger than for any month since last July, they were 10,835 bbls. a day less than in March 1925.

The company's statement for March 1926 gives deliveries as 4,588,038 bbls., an average of 148,001 bbls. per day. In March 1925 the daily average was 158,836 bbls. per day.

The company's shipments for the past 12 months averaged 141,246 bbls. a day. Its low point was in September, 122,945 bbls.; its high point in June, 157,204 bbls.

Following is the company's daily average shipments by months for 12 months:

	Bbls.
March	148,001
February	145,407
January	135,077
December	134,909
November	128,359
October	128,731
September	122,945
August	139,306
July	155,568
June	157,204
May	152,253
April	147,196
Average 12 months	141,246

CRUDE OIL PRICES

(Continued from Page 143)

Penna Grade Oil in Buckeye Pipe Line Lines (Ohio)	3.30
Cabell Grade Oil in Eureka Pipe Line Lines (West Virginia)	2.20
Corning Grade Oil in Buckeye Pipe Line Lines (Ohio)	2.35
Somerset Medium Oil in Cumberland Pipe Line Lines (Kentucky)	2.30
Somerset Light Oil in Cumberland Pipe Line Lines (Kentucky)	2.45
Ragland Grade Oil in Cumberland Pipe Line Lines (Kentucky)	1.15
Gaines (Pennsylvania)	2.95
Keister (Pennsylvania)	2.45

MIDDLE WESTERN STATES

Ohio Oil Co.

Lima	$2.23
Wooster	2.35
Illinois	2.12
Indiana	2.00
Princeton	2.12
Plymouth	1.65
Waterloo	1.10
*Western Kentucky, 32.9° and below	1.85
33° to 35.9°	1.95
36° to 38.9°	2.05
39° and above	2.15
**Cumberland, Barren and Monroe Counties	2.45
†Oil Springs (Canada)	2.70
†Petrolia (Canada)	2.63

*Posted by Indian Refining Co.
**Posted by Paragon Development Co.
†Posted by Imperial Oil Co., Ltd.

MEXICAN

*Tuxpam light (f.o.b. Mex. ports)	$1.35
§Panuco heavy (f.o.b. Mex ports)	1.15
Tuxpam (New York)	2.05
Panuco (New York)	1.70

*Plus 30.33c tax. §16.93c tax.

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Annual Reports Show Good Oil Year

Securities Were Heavy Early in Week, Then Rallied, But Later Became Dull. Atlantic Refining's Earnings

By N. O. Fanning

New York Bureau, The Oil and Gas Journal, 30 Church St., New York

NEW YORK, Apr. 5.—Oil securities were heavy during the early part of the past week with many new lows recorded. Later they rallied but turned dull. Atlantic Refining which earned more than $11 per share in 1925 on common stock was firm, common advancing to 104.

Oil Company Reports

The annual reports issued by the major oil companies to date for 1925 have been, generally speaking, better than anticipated. It is generally agreed that 1925 was an unusually good year in many respects, although there was no boom.

Expectations that 1926 will exceed 1925 have been widely expressed, but many concerns cannot feel that this year will have been a failure if it equals last.

A conservative opinion was expressed in the annual report of the National Supply Co. which lacks the glowing optimism assumed in many directions. It says: "In our report of a year ago, we expressed the belief that the industry had reached the low point and that any change would be in the direction of improvement. As we have stated, conditions in 1925 have shown some, though not marked, improvement, and it is our belief that this general trend will continue in the year, 1926."

It is habitual, in many reports, to say: "We expect this year will be the most prosperous in the history of the oil business," or, "We believe the oil business is on the eve of an era of unparalleled prosperity."

It is pointed out by some oil leaders that overoptimism breeds disappointment, while caution usually leads to pleasant surprises.

Associated Oil

The report of the Associated Oil Co. and proprietary companies for the year ended December 31, 1925, shows net profit of $10,465,249 after interest, Federal taxes, depreciation and depletion, equivalent to $4.67 a share (par $25) earned on the outstanding $56,000,000 capital stock, compared with $6,405,329 or $2.85 a share in 1924.

The income account of the Associated Oil Co. and affiliated companies for 1925 compares with 1924 as follows:

	1925	1924
Operating income	$78,022,132	$69,859,166
Other income	1,651,111	1,670,291
Gross revenue	$79,673,243	$71,529,457
Oper. exp., int., Fed. taxes, etc.	69,207,994	65,124,128
Net profit	$10,465,249	$ 6,405,329
Dividends	4,200,000	3,360,000
Surplus	$ 6,265,249	$ 3,045,329

National Supply

The report of the National Supply Co. of Delaware and subsidiaries for the year ended December 31, 1925, shows net income of $2,014,756 after interest, Federal taxes, depreciation, etc., equivalent after preferred dividends, to $5.70 a share (par $50) earned on 265,900 shares of common stock. This compares with $1,847,269 or $5.08 a share in 1924.

Skelly Oil

The report of the Skelly Oil Co. and subsidiaries for the year ended December 31, 1925, shows net income of $3,755,715 after interest, Federal taxes, depreciation and depletion, etc., equivalent to $4.43 a share (par $25) earned on the average number of shares outstanding during the year. This compares with $22,342, or 2 cents are share, on 823,163 shares of stock outstanding in 1924.

The South Penn Oil Co. for the year ended December 31, 1925, reports net income of $2,375,330 after taxes, depreciation and depletion, equivalent to $11.87 a share earned on $20,000,000 capital stock. This compares with $1,527,468, or $7.63 a share, in 1924.

The income account for 1925 compares with 1924 as follows:

	1925	1924
Gross	$14,885,601	$13,508,804
Exp., taxes, depr., and depletion	12,510,271	11,981,336
Net income	$ 2,375,330	$ 1,527,468
Dividends	300,000	.....
Surplus	$ 2,075,330	$ 1,527,468
Prev. surplus	12,469,376	10,941,908
*Adjustment	9,597,123	.....
P. & L. surplus	$24,141,829	$12,469,376

*Excessive depreciation and depletion charged off prior to 1925, after allowance for the contingent loss reserve.

The balance sheet of the Standard Oil Co. of Nebraska as of December 31, 1925, compares as follows:

Assets	1925	1924
*Plant	$ 2,643,231	$ 2,735,662
Merchandise	999,747	1,014,569
Cash	877,506	867,239
Accts. receivable	392,771	361,597
Investments	2,031,054	1,427,907
Total	$ 6,944,309	$ 6,406,974
Liabilities		
Capital stock	$ 3,012,400	$ 3,000,000
Accts. payable	465,337	363,996
Fed. tax., res., etc.	154,135	111,108
Surplus	3,312,437	2,931,870
Total	$ 6,944,309	$ 3,406,974

*After depreciation.

Standard Oil of Ohio

The balance sheet of the Standard Oil Co. of Ohio as of December 31, 1925, compares as follows:

Assets	1925	1924
Plant	$37,835,801	$36,415,402
Merchandise	7,236,809	5,391,082
Cash	422,239	249,688
Accts. receivable, etc.	7,951,741	7,890,335
Total	$53,446,590	$49,946,507
Liabilities		
Preferred stock	$ 7,000,000	$ 7,000,000
Common stock	14,000,000	14,000,000
Accts. payable	3,427,708	2,711,397
Deprec. acct.	8,307,837	7,095,213
Federal tax reserve	1,101,335	1,095,609
Surplus	19,609,710	18,044,288
Total	$53,446,590	$49,946,507

The report of the Sinclair Consolidated Oil Corp. for the year ended December 31, 1925, shows surplus of $6,002,793 after deducting reserve for depreciation, depletion, amortization, etc., equivalent after preferred dividends to $1.01 a share earned on 4,999,162 shares of no par value common stock. This compares with a deficit of $2,149,268 in the previous year.

The consolidated income account for 1925 compares with 1924 as follows:

	1925	1924
Gross earnings	$159,544,216	$123,894,048
Expes., maint., etc.	130,599,569	107,467,118
Net earnings	$ 28,944,647	$ 16,426,930
Int., disc., etc.	7,731,734	6,036,138
Balance	$ 21,212,913	$ 10,390,792
Depr., depl., etc.	15,210,120	12,540,060
Net income	$ 6,002,793	*$ 2,149,268
Pref. dividends	1,455,474	1,512,930
Common dividends	.....	4,486,384
Surplus	$ 4,547,319	*$ 8,148,642

*Deficit.

The consolidated balance sheet of the Sinclair Consolidated Oil Corp. and subsidiaries as of December 31, 1925, compares with the preceding year as follows:

Assets	1925	1924
Real estate, leases pipe lines, etc.	*$231,089,979	$314,284,383
Investments	60,163,788	60,035,238
Special funds	1,601,203	1,511,002
Accts., notes, recv.	13,381,153	11,028,922
Cash	5,798,935	6,174,807
Empl. stck subscpt.	508,700	920,118
Inventories	27,635,606	24,304,688
Advances, etc	471,647	419,325
Market. secur.	3,450,180	3,763,522
Deferred charges	7,811,568	8,905,157
Total	$351,912,759	$431,347,162
Liabilities		
Common stock	‡$204,197,841	‡$204,052,441
Surplus	15,423,645	10,876,327
Preferred stock	17,852,200	18,541,100
Min. int. in subsid.	109,790	109,790
Ins. & misc. reserve	2,769,821	†85,148,177
Funded debt	90,954,499	93,307,500
Purch. money oblig.	1,975,428	2,998,787
Notes payable	2,000,000	3,600,000
Accts. payable	14,223,544	9,878,377
Accruals, etc.	2,405,991	2,834,663
Total	$351,912,759	$431,347,162

*After reserve for depreciation, depletion, amortization amounting to $96,052,505. ‡Represented by 4,491,892 shares of no par value. †Includes reserves for depreciation, depletion and amortization.

Ohio Oil Co.

Statement of Ohio Oil Co. as of December 31, 1925, shows total assets of $99,878,010 comparing with $97,697,982 at the end of 1924. Profit and loss surplus was $35,877,569 against $32,494,316 in previous year.

Balance sheet of Ohio Oil Co. as of December 31, 1925, compares as follows:

Assets	1925	1924
Plant	$30,015,540	$30,905,391
Cash	1,873,824	1,895,172
Notes & accts. rec.	3,422,235	2,762,168
Inventories	30,493,443	28,880,949
Investments	33,863,595	33,011,093
Unadj. debits	209,073	243,209
Total	$99,878,010	$97,697,982
Liabilities		
Cap. stock	$60,000,000	$60,000,000
Funded debt	267,000	267,000
Notes & accts. pay.	903,072	2,671,224
Unadj. cred.	474,329	603,494
Res. for taxes	1,906,774	1,103,893
Min. int. in subs.	548,766	558,055
Surplus	35,877,569	32,494,316
Total	$99,878,010	$97,697,982

Mid-Continent Petroleum Corp.

The Mid-Continent Petroleum Corp., in its detailed report for 1925, shows a net income of $7,000,926, after depreciation, depletion, interest, Federal taxesc, etc. This is equal, after provision for preferred dividends, to $4.81 a share on 1,357,415 shares of no par common stock. In 1924 the figures were $1,424,965, or 69 cents a share.

Transcontinental Oil Co. reports for year ended December 31, 1925, net profit of $792,580 after interest, depreciation, depletion, dry holes and leases and property abandoned, etc., equivalent to $5.03 a share earned on 157,500 shares of 7 per cent preferred stock.

NEW YORK STOCK EXCHANGE—LIST OF ACTIVE STOCKS

Stocks—	Par	Clos. Quot. Apr. 5	Clos. Quot. Mar. 29	1926 High	1926 Low	1925 High	1925 Low	1924 High	1924 Low
American Republics	..	68	68	74	63	79¾	48	48	25
Associated Oil	25	48	52	59½	44¾	47⅛	32	34⅝	27⅝
Atlantic Ref., com.	100	104	99¾	110	97	117½	95⅛	140½	78½
Barnsdall "A"	25	27½	26	33½	26	33½	18¾	29½	14
California Pet., com.	25	34⅛	34	38⅛	30⅝	34⅞	23⅞	29	19⅝
General Petroleum	25	58¾	57⅛	65⅜	51⅛	59	42	45	38⅝
Houston Oil	100	56⅛	54	72	53	85	59	82½	61
Independent Oil & Gas	..	24	21½	34	20⅛	41⅝	13½	16¼	5⅝
Indian Refining	10	10	10	13¾	9½	14¼	8½	7	3⅝
Louisiana Oil	10	14½	14½	19⅝	12	23⅝	13⅝	..	..
Maracaibo	..	23½	22½	28⅞	20⅜	35½	20⅝	37¼	25⅞
Marland	..	54	52	60¼	49¼	60½	32⅝	42	29
Mexican Seaboard	..	8⅛	7⅛	13⅝	6	22½	9	25⅝	14½
Mid-Continent Pet.	..	30⅞	29	41	28⅝	38	25⅜	40¼	22⅝
National Supply	50	63⅞	61½	65⅞	55½	71	54⅜	72½	54
Oil Well Supply	25	*30¼	31½	36	30½	38	33⅜	..	..
Pacific Oil	..	53⅝	53⅜	83⅛	53⅜	78½	51⅛	58¼	45
Pan. Amer. P. & T., com.	50	62	63⅛	76⅛	56⅜	83⅞	59½	65	44½
Pan. Amer., Western B.	..	37¼	35⅛	46	34	49⅝	37¼	..	..
Phillips Pet.	..	43⅛	43½	45⅜	42½	17⅛	36⅛	42¼	28⅛
Producers & Refiners	50	13	11⅝	17⅛	11	32⅝	12½	43½	29¾
Pure Oil, com.	..	26⅜	26	31	26	33⅜	25⅛	30⅝	20
Royal Dutch, N. Y., sh.	13.40	51⅝	51	57⅞	50	57⅞	48¼	59⅝	40⅝
Shell Transport	10	42⅝	42⅜	48⅞	42	49	33⅜	42	23
Shell Union, com.	..	24⅞	25	28⅛	24	28⅜	21⅝	22½	15⅜
Simms Pet.	10	21⅜	21½	28⅝	20⅜	28½	17⅜	24	10⅜
Sinclair Consolidated, com.	..	21⅛	21¼	24⅞	20⅜	24⅜	17	17½	15
Skelly Oil	25	30⅜	27⅞	32⅞	27	32½	21⅜	29	17½
Standard of California	25	54⅝	54	62¼	54	67¼	51½	68⅛	55⅛
Standard of New Jersey, com.	25	42½	41⅜	46⅞	40¼	47½	38⅝	41½	33
Sun Oil Co.	..	*33	32	41⅝	31½	43⅞	38½	..	..
The Texas Company	25	51	49	54⅞	49	55	42⅜	45⅝	37⅜
Texas Pacific Coal & Oil	10	13⅞	13½	19½	12⅛	23⅜	11	15¼	8¼
Tide Water Oil (new)	..	*32	32½	39¼	32½	‡152	122	151	116¼
Transcontinental	..	3¼	3½	4⅝	3	5⅞	3½	6¼	3⅝
Union Oil of California	25	45⅝	46	49⅜	37¼	43⅝	33⅛	39	35½
Union Tank, com.	100	88	88	94	74¼	‡134	118	132⅞	94
White Eagle Oil & Refining	..	26⅝	26½	29⅜	26¼	31⅜	25⅝	29⅞	23½
Standard Oils									
Anglo-American Oil	£1	17⅝	18¼	19¾	17⅝	26⅜	17½	18⅜	14⅝
Borne Scrymser	100	*230	*235	248	226	240	205	264	150
Buckeye Pipe Line	50	*53	54½	59⅛	54½	72	53½	85⅛	51
Chesebrough Mfg. Co.	25	*65	66½	72⅜	63	74	48¼	52⅛	29¼
Continental	10	20⅝	21	25⅞	20¼	31½	21⅞	..	..
Crescent Pipe Line	25	*14	14½	16	14⅛	17⅛	10	20	11⅜
Cumberland Pipe Line	100	*120	126	137	136	156	128	148	108
Eureka Pipe Line	100	*55	56	63⅜	56	96	61¼	105	74
Galena Signal, com.	100	*22½	24	32½	24	68⅛	23½	69⅜	52½
Humble Oil & Refining Co.	25	56½	56½	99⅝	56	99	42½	43⅜	36
Illinois Pipe Line	100	141½	138	144	‡134½	154½	124	161	123
Imperial Oil (Ltd.)	..	34½	33½	38⅜	32½	39¼	27¼	119	99
Indiana Pipe Line	50	*65	65½	67	58	84	57½	100	66
International Pet. Co.	10	31⅜	30⅛	35½	29⅜	35⅝	22⅛	24⅜	16⅞
National Transit Co.	12.50	*16	*17⅝	20⅜	18	25½	16⅛	25⅞	20⅝
New York Transit	100	*45	*47	50	39	79	50	97	54½
Northern Pipe Line	100	*78	*75	80½	70⅝	88	67½	107½	72
Ohio Oil Co.	25	61½	*60⅜	67⅝	59⅜	75¼	60	79½	53
Penn.-Mex. Fuel	25	*14	*14	23	16¼	44	19	35⅝	27
Prairie Oil & Gas	25	54⅜	52⅜	60¼	52¼	65½	45⅞	269	193
Prairie Pipe Line	100	*123	124	127	122½	129¾	105	111	100
Solar Refining Co.	100	*196	196	212	191	259	200	240	170
South Penn Oil	25	*40	*40	50	40	‡197	139	176	117
Southwest Pa. Line	100	*53	*54	54½	47½	84	50	89	68
Southern Pipe Line	100	*65	*69	74½	61½	103	63	100	80½
Standard of Indiana	10	63¼	62⅜	70½	61⅝	70⅝	59½	69⅝	54¼
Standard of Kansas	25	28	28⅝	36½	28⅝	46	30¼	50½	32½
Standard of Kentucky	25	*116½	118	134⅝	118	137	114⅝	121⅞	101
Standard of Nebraska	100	260	252	263	206	270	231	262	198
Standard of New York	25	32	32	47¼	31⅝	48⅝	40	48	37⅝
Standard of Ohio, com.	100	308	*319	362	310	369	338	337½	277
Swan & Finch, com.	25	18¾	*18	21	18	27	12	28	20
Vacuum Oil	25	99½	97¼	109⅝	94⅛	109½	80½	83½	50½
Miscellaneous									
Gulf Oil Corp. of Pa.	25	84⅞	84½	93¾	84½	98¼	63½	67⅝	56

*Bid, no sales. ‡Old stocks.

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange was as follows:

Apr. 5	56.78	Mar. 1	55.84	Jan. 25	57.96
Mar. 29	56.18	Feb. 20	58.23	Jan. 18	57.38
Mar. 22	57.96	Feb. 15	57.51	Jan. 11	57.55
Mar. 15	56.34	Feb. 8	58.96	Jan. 4	59.15
Mar. 8	55.02	Feb. 1	58.51	Dec. 28	59.40

Graphic Analysis of the Oil Industry

Developments and Changes in Situation During Month. Crude Stocks Lower; More Refined Products in Storage

By Charles E. Bowles
Petroleum Analyst, The Oil and Gas Journal

At the end of February there were 517 rigs and 2,154 drilling wells in the Mid-Continent. This is more rigs and more drilling wells than in all of the other areas of the United States combined. And while, in 1925, the new or initial daily production of the Mid-Continent far exceeded that of the rest of the country, there has been but little difference between the two areas during recent months as is shown in Graphs 2 and 3 herewith.

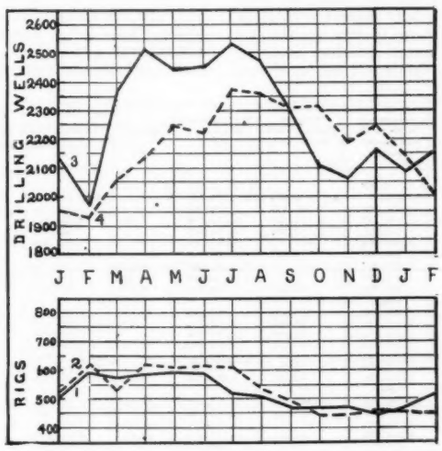
The result of this close parallel in new production is clearly reflected by lines 2 and 3 in Graph 4 herewith. It is interesting to note that, aside from the "hump" in the California line (4) in the early part of 1925 and in the Arkansas line (7) whose peak came in May, that the four major producing states—California, Oklahoma, Texas and Arkansas—followed almost exactly the same basic trend since the midsummer of 1925. And a continuation, through the year 1926, of this basic trend in the current supply of crude oil would not only help the producing end of the industry but would relieve the refining end from the tendency to run too much crude when large new supplies press heavily against them.

Line 2 of Graph 5 (gasoline produced) is the only line that need give the industry concern today. It turned up sharply in February, while line 3 (fuel oil produced), line 6 (kerosene) and line 7 (lubricating oil) turned down. The fuel oil production line (3) is for the entire United States—and while we do not know the exact amount of fuel oil in storage today in California, it is reassuring to know that the general trend of the monthly production of fuel oil for the entire country has been downward since July, 1925. Increased refining runs, during the coming summer, will naturally increase the output of fuel oil—but if the peak of production in 1926 does not run much higher than the peak of 1925, the natural increase in demand this year will take care of the fuel oil storage situation.

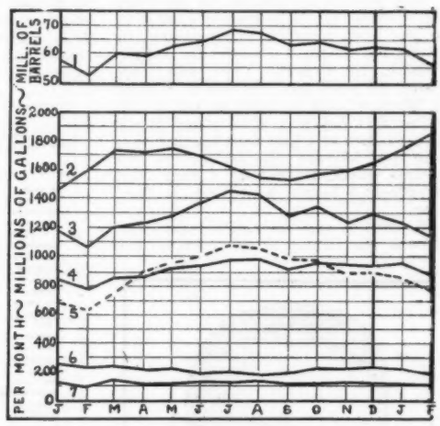
In December, as shown in Graph 6, there was a heavy draft on pipe line and tank farm stocks, a smaller draft on refined stocks and about an even break in crude in storage at refineries. It is interesting to note that the changes that took place during January were such that at the end of the month all three lines (pipe line and tank farm, crude at refineries and refined products at refineries) were above the zero line. This means that all three of these stocks increased during January.

During February, however, pipe line and tank farm stocks were reduced by 3,568,000 bbls.—crude oil in storage at refineries was reduced by 347,000 bbls.—and foreign crude not at refineries was increased 8,000 bbls. This gives a net decrease in crude oil in storage of 3,907,000 bbls. However, during February, the storage of refined products at refineries increased 2,990,000 barrels. The net result of these changes in crude and refined stocks was a decrease in the total stocks of about 916,000 barrels, as shown in the "Supply and Demand" table elsewhere in this issue.

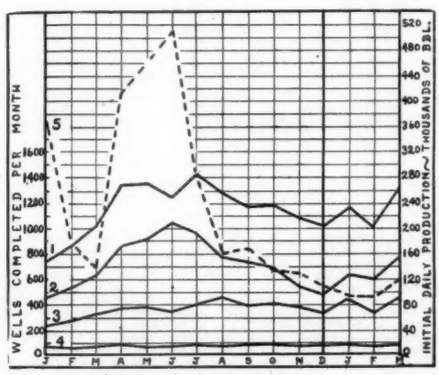
Of the total of 542,000,000 barrels in storage at the end of February, almost 124,000,000 barrels was refined products—and this does not include many millions of refining fuel oil in California. This last item is included in the 418,000,000 barrels of crude oil in storage. If it were possible to draw a clear line between the strictly crude oil and the refined products in storage it is probable that the ratio would be a little less than three barrels of crude in storage to one barrel of refined products.



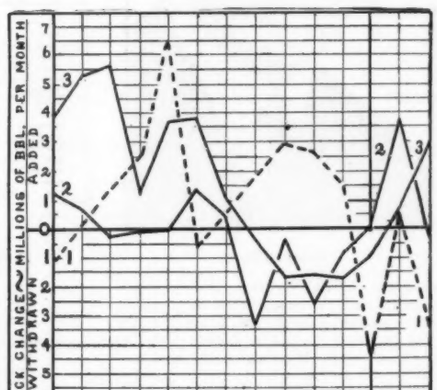
Graph 1. New operations. 1—Rigs in the Mid-Continent. 2—Rigs outside of the Mid-Continent. 3—Drilling wells in the Mid-Continent. 4—Drilling wells outside of the Mid-Continent.



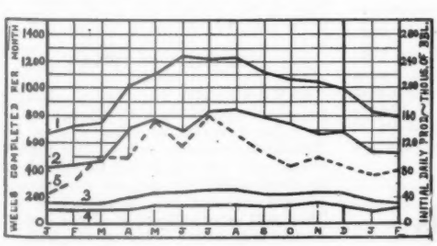
Graph 5. Refinery operations. 1—Crude oil run to stills. 2—Gasoline stocks. 3—Fuel oil produced. 4—Gasoline supply (production plus imports). 5-Gasoline demand (domestic demand plus exports). 6—Kerosene produced. 7—Lubricating oil produced.



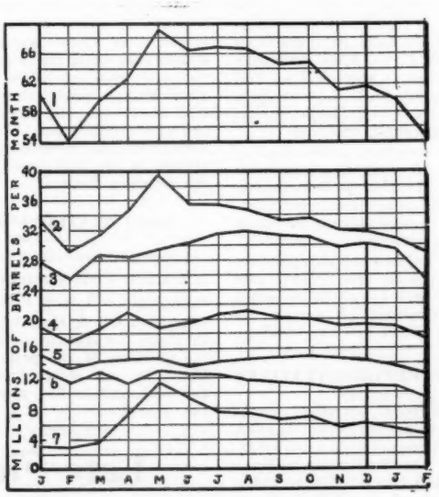
Graph 2. Wells completed in the Mid-Continent. 1.—Total wells completed. 2—Oil wells. 3—Dry holes. 4—Gas wells. 5—Initial daily production (read scale, right hand side).



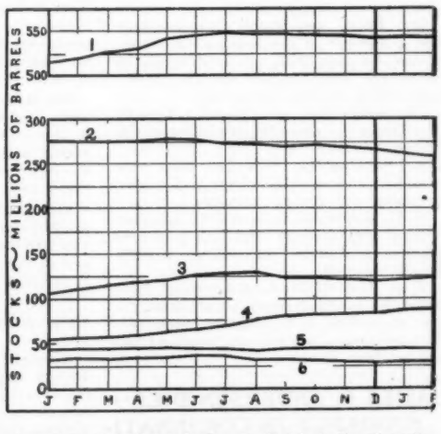
Graph 6. Additions to and withdrawals from stock. 1—Pipe line and tank farm. 2—Crude oil at refineries. 3—Refined stocks at refineries.



Graph 3. Wells completed in the United States outside of the Mid-Continent. 1—Total wells completed. 2—Oil wells. 3—Dry holes. 4—Gas wells. 5—Initial daily production (read scale, right hand side).



Graph 4. Production of crude oil. 1—Total for the United States. 2—Mid-Continent. 3—Outside of the Mid-Continent. 4—California. 5—Oklahoma. 6—Texas. 7—Arkansas.



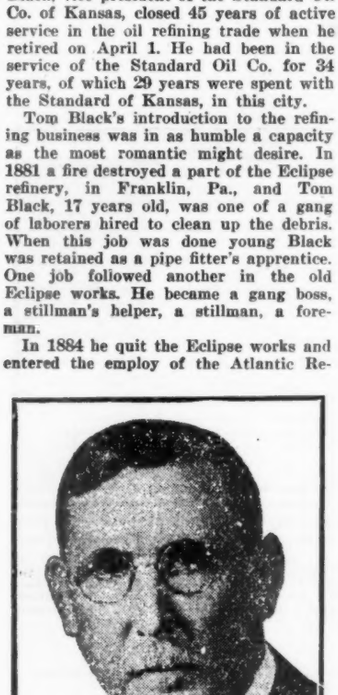
Graph 7. Petroleum stocks. 1—Total stocks of crude and refined for entire United States. 2—Pipe line and tank farm stocks east of California. 3—Refined products at refineries. 4—Heavy crude oil and fuel oil in storage in California. 5—Light oil in storage in California. 6—Crude oil at refineries east of California.

Thomas Black Closes 45 Years' Service in the Refining Industry

NEODESHA, Kans., Apr. 2.—Thomas Black, vice president of the Standard Oil Co. of Kansas, closed 45 years of active service in the oil refining trade when he retired on April 1. He had been in the service of the Standard Oil Co. for 34 years, of which 29 years were spent with the Standard of Kansas, in this city.

Tom Black's introduction to the refining business was in as humble a capacity as the most romantic might desire. In 1881 a fire destroyed a part of the Eclipse refinery, in Franklin, Pa., and Tom Black, 17 years old, was one of a gang of laborers hired to clean up the debris. When this job was done young Black was retained as a pipe fitter's apprentice. One job followed another in the old Eclipse works. He became a gang boss, a stillman's helper, a stillman, a foreman.

In 1884 he quit the Eclipse works and entered the employ of the Atlantic Re-



Thomas Black

fining Co., in Philadelphia. He was back in Franklin two years later on a much better job than that which he left. In 1893 he went to the Standard Oil Co. of Indiana, at Whiting, Ind., and became a still foreman.

Mr. Black came to Neodesha in 1897 as superintendent of the small refinery of the Standard Oil Co. of Kansas. He had a three-year contract. It was not even thought at that time that the refinery would grow to its present capacity of 12,000 bbls. a day, as the Kansas Field then was small and little was expected of Oklahoma and the Indian Territory as an oil region.

Mr. Black was made vice president and a member of the board of directors of the company, but not until about 10 years ago did he give up the active supervision of plant operations.

His resignation has caused a number of changes in the company's personnel, effective April 1.

A. S. Hopkins, who has been vice president and superintendent, is now vice president and general manager.

P. H. Rohde, the present sales manager retains that position and has been appointed a director succeeding Thomas Black, resigned.

E. A. Metcalf has been promoted from assistant superintendent to superintendent, succeeding A. S. Hopkins, promoted. The position of second vice president has not yet been filled.

JAMES R. ANDERSON DIES SUDDENLY IN CINCINNATI

James R. Anderson, traveling representative of the Lunkenheimer company, Cincinnati, passed away Monday, March 15. He became ill while en route from New Orleans to Little Rock and was taken to a hospital at Monroe, La. His conditions improved three or four days later and he returned to his home in Cincinnati, where his death occurred.

Mr. Anderson was born in Scotland in 1864, and when 15 years of age he came to this country. In 1894 he became connected with the Lunkenheimer company. He was located in New Orleans for many years and later removed to Cincinnati.

Mr. Anderson enjoyed the acquaintance of jobbers throughout the country and was particularly well known in the south and in the Mid-Continent oil district. He is survived by a widow and two children.

GASOLINE TAXES IN 1925 TOTALED $146,028,940. FUNDS USED FOR ROADS

By Charles E. Kern.
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Apr. 3.—Nearly $150,000,000 was paid in gasoline taxes in 1925 by motor vehicle operators, according to the Bureau of Public Roads of the United States Department of Agriculture. The exact amount collected was $146,028,940, which is an increase of 83 per cent over the total in 1924 and four and one-half times the total in 1923. The increase is due to the increased use of motor vehicles, adoption of the tax by a number of States which had not previously resorted to it, and increased rates of taxation by other States.

Of the total tax collected, $102,065,216 was made available for State highways, $32,721,704 for county and local roads, $217,393 for collection costs and $11,024,627 for other purposes.

No tax was assessed in Illinois, Massachusetts, New Jersey and New York. The $146,028,940 collected in the remaining states was derived from the taxation of a total of 6,457,783,284 gallons of gasoline, from which it appears that the average rate is 2.26 cents per gallon. The average consumption per vehicle was about 430 gallons. In the 44 States in which the tax was levied the average amount paid by the motor vehicle operator was $9.22.

The government bureau estimates that 75.2 per cent of all the gasoline consumed in the United States during 1925 was taxed. The 2,131,056,365 gallons which were not taxed was consumed in States where no gasoline tax is in effect or was consumed before the tax became effective.

The total receipts from the gasoline tax after the deduction of such refunds as were allowed by law and the tax rate per gallon are given below:

States and District of Columbia	Gross Tax Assessed, Prior to Deduction of Refunds	Exemption Refunds: (Deduct from Gross Tax)	Total Tax Earnings on Fuel for Motor Vehicles	Disposition of Total Tax Earnings: Collection Costs	Construction & Maintenance on Rural Roads: State Highways	Construction & Maintenance on Rural Roads: Local Roads	For Other Purposes	Tax Rates, 1925: Cents per Gallon Jan 1st	Cents per Gallon Dec 31st	Date of Rate Change	New Gallons of Gasoline Taxed and Used by Motor Vehicles	Estimated Additional Gallons (not Taxed) Used by Motor Vehicles
Alabama	$ 2,140,602	-	$ 2,140,602	$ 9,461	-	(1) 2,131,141	-	2	2	-	107,040,092	-
Arizona	1,035,551	$ 179,600	855,951	-	$ 427,976	427,975	-	3	3	-	28,531,636	-
Arkansas (2)	3,230,568	240,199	2,950,369	-	1,357,140	(3) 1,593,000	-	4	4	-	73,759,212	-
California	16,150,387	1,193,589	14,956,798	7,383	7,229,248	7,229,248	(4)† 490,900	2	2	-	747,839,462	-
Colorado	1,991,831	30,585	1,960,946	-	980,473	980,473	-	2	2	-	97,377,858	-
Connecticut	1,908,609	-	1,908,609	-	1,908,609	-	-	1	2	7/1	122,230,282	-
Delaware	350,560	8,469	342,091	-	342,091	-	-	2	2	-	17,104,060	-
Florida	7,657,507	-	7,657,507	6,000	5,549,978	2,101,529	-	3	4	6/5	210,323,517	-
Georgia	4,413,824	-	4,413,824	4,200	1,641,248	1,386,688	(5)1,386,688	3	3½	8/26	138,802,152	-
Idaho	932,064	36,621	895,443	9,466	895,977	-	-	2	3	3/1	30,809,320	-
Illinois	none	-	-	-	-	-	-	0	0	no tax	-	530,534,340
Indiana	7,833,462	179,413	7,653,049	12,435	5,200,637	2,439,978	-	2	3	4/1	272,980,870	-
Iowa	3,566,184	63,069	3,506,115	5,520	1,161,144	2,302,289	(6) 46,162	0	2	4/16	175,255,740	51,796,350
Kansas	3,000,253	93,059	2,926,194	-	2,926,194	-	-	0	2	7/1	149,279,690	42,891,710
Kentucky	3,041,560	-	3,041,560	-	3,041,560	-	-	3	2/ 3	-	101,385,313	-
Louisiana	2,339,543	-	2,339,543	-	(8) 2,339,543	-	-	2	2	-	116,939,139	-
Maine	1,283,976	15,526	1,268,340	5,596	(9) 1,262,752	-	-	1	3	7/11	56,413,741	-
Maryland	2,022,986	45,980	1,977,038	2,800	(10)1,679,629	-	(11) 294,907	2	2	-	99,851,913	-
Massachusetts	none	-	-	-	-	-	-	0	0	no tax	-	274,615,025
Michigan	9,742,388	506,314	9,236,079	41,358	(12)6,694,720	(13)1,500,000	-	0	2	2/1	411,803,894	19,856,370
Minnesota	3,989,242	125,342	3,863,940	-	3,863,940	-	-	0	2	4/1	198,484,097	59,903,930
Mississippi	2,484,274	-	2,484,274	1,800	(8) 1,294,976	(8) 1,203,715	(14) 63,743	3	3	-	83,142,466	-
Missouri	4,234,070	74,955	4,159,115	23,429	4,135,686	-	-	2	2	1/1	207,955,474	-
Montana	974,710	-	974,710	-	101,207	371,080	(15) 202,413	2	2	-	33,735,697	-
Nebraska	2,202,236	8,424	2,153,902	4,963	2,186,939	-	-	0	2	4/1	109,890,122	28,570,900
Nevada	335,445	16,741	318,705	-	159,353	159,352	-	2	4	4/1	8,850,407	-
New Hampshire	716,140	9,068	707,072	-	707,072	-	-	2	2	-	35,353,585	-
New Jersey	none	-	-	-	-	-	-	0	0	no tax	-	248,639,220
New Mexico	537,355	-	537,355	26,988	(8) 510,488	-	-	3	3	3/17	20,490,952	-
New York	none	-	-	-	-	-	-	0	0	no tax	-	715,276,520
North Carolina	6,230,509	156,130	6,042,379	-	6,042,379	-	-	3	4	2/21	161,371,522	-
North Dakota	849,416	15,000	834,416	-	224,095	-	(15) 410,321	1	1	-	64,941,557	-
Ohio	9,133,786	123,835	9,009,950	-	(8) 4,054,478	(8) 2,252,487	(16)2,702,985	0	2	4/16	450,497,522	99,560,400
Oklahoma	5,143,517	-	5,143,517	-	3,351,884	1,791,633	-	2½	3	3/23	176,753,177	-
Oregon	3,065,191	156,056	2,909,095	6,553	2,902,542	-	-	3	3	-	96,569,835	-
Pennsylvania	8,352,794	-	17,8,352,788	-	1,125,818	2,105,817	(17)3,110,052	2	2	-	416,086,430	-
Rhode Island	316,357	-	316,357	-	316,357	-	-	0	1	4/29	31,635,688	3,696,640
South Carolina	3,870,588	5,185	3,865,403	-	2,186,152	1,512,899	(18) 186,352	3	4	3/23	83,962,562	-
South Dakota	2,122,405	274,806	1,847,599	-	1,847,599	-	-	2	3	3/10	64,024,928	-
Tennessee	3,627,686	-	3,627,686	22,752	3,385,116	-	-	2	3	2/9	122,000,580	-
Texas	4,641,786	-	4,641,786	-	1,491,338	-	(19)1,160,446	1	1	-	464,178,427	-
Utah	1,064,004	-	1,064,004	3,780	(20)1,060,224	-	-	2½	3½	4/1	32,217,218	-
Vermont	502,272	-	502,272	-	(8) 502,272	-	-	1	2	2/26	27,903,167	-
Virginia	3,863,117	161,166	3,701,951	5,804	2,464,231	1,232,116	-	3	21/3	-	123,398,368	-
Washington	3,205,114	184,302	3,020,812	-	3,020,812	-	-	2	2	-	141,040,586	-
West Virginia	2,222,329	35,590	2,186,738	7,800	(22)2,179,238	-	-	2	3½	7/1	76,331,680	-
Wisconsin	4,155,489	123,793	4,031,676	10,000	4,021,676	-	-	0	2	4/1	201,683,789	49,830,960
Wyoming	460,972	4,675	456,297	229	456,068	-	-	1	2½	4/1	20,746,058	-
Dist. of Columbia	896,583	6,970	889,886	-	-	-	(23) 889,886	2	2	-	44,479,886	-
TOTALS	-	-	146,028,940	217,393	102,065,216	32,721,704	11,024,627	Av. 2.26		-	6,457,783,284	2,131,056,365

REMARKS: Total tax earnings on fuel for motor vehicles represent the actual taxes which are available for disposal according to the laws of the various States. The gross tax assessed and exemption refunds show the procedure for deriving the total tax, and these totals being of minor importance are not entered in this table. As some states allow no refunds for uses other than for propelling motor vehicles on highways, some of the total taxes are derived from liquid fuel, such as gasoline, etc., used for dyeing and cleaning, and for use in motor boats, farm tractors, etc., which facts should be taken into account. A majority of the states paid for collection costs from sources other than from this tax. The last column shows estimates based on best available data and is shown so that a fair figure for gasoline consumption may be obtainable.

NOTES: (1) For maintenance only. (2) In addition $436,436 collected on motor oil tax of 10 cents per gallon. (3) Includes $873,240 payments on county road and bridge bonds. (4) Delinquent taxes uncollected not disposable in 1925. (5) To State treasury; same partly used to pay discounts on western and Atlantic railroad rentals. (6) Unaccounted for; probably delinquent taxes. (7) Tax increased to 5 cents effective February 21, 1926. (8) For maintenance only. (9) Includes $282,913 for maintenance. (10) For maintenance and reconstruction. (11) For maintenance of Baltimore streets. (12) Includes $3,000,000 for interest and retirement payments on state road bonds. (13) Payments to counties on State award highways (14) For sea-wall in Harrison County. (15) For State general fund. (16) Maintenance of municipal streets. (17) Includes $70,868 paid in delinquent taxes of former years. (18) Covers part of first four months of year only, as new law excludes State general fund from share in gasoline tax fund. (19) For free school fund. (20) Includes $460,000 payment of interest and to sinking fund on State road bonds. (21) Tax increased to 4½ cents effective March 11, 1926. (22) Includes $1,520,463 payment of interest on State road bonds. (23) For improvement and repair of Washington streets.

NEW BROOKS REPRESENTATIVES

Stephen H. Brooks, president of the Brooks Engineering Corp., Los Angeles, conservation and fire prevention engineers, announces that the Southwestern Engineering Corp., 805 Mayo Building Tulsa, has been appointed as Mid-Continent Field representative of the company. Billy Walker, with offices in the San Jacinto Life Building, Beaumont, Tex., is the Gulf Coast representative. Mr. Brooks also states the Brooks Engineering Co. will open an office in New York about May 1. This company was organized about one and one-half years ago and the appointment of the new representatives was necessitated by the rapid growth in the business of the concern in the different fields.

SALT WATER POLLUTION

Representatives of the oil operators in the Kay County extension of the Burbank Field will meet Friday in the Mid-Continent Oil & Gas Association rooms in Tulsa for the purpose of discussing the question of the pollution of Beaver Creek by salt water from oil wells in the field, and to find means of relieving the situation.

Late Fields

(Continued from Page 36)

SE cor. Section 21-4-14, was drilling at 2,144 feet in hard sand. M. M. Valerius' No. 1, NW cor. SW, Section 18-3-12, was shut down at 170 feet waiting for rotary to be moved over from No. 1 Hovey. Valerius' No. 2, SE cor. Section 35-5-12, was shut down at 700 feet during the recent snowstorm but resumed drilling last Saturday.

The Reiter-Foster Oil Corp. and Brann staked a location for No. 1, NE cor. Section 10-2-11. The Reiter-Foster Oil Corp was drilling at 300 feet in its well in Section 9-3-15. Allison, Garber & Pulse were drilling around 700 feet in their well in Section 4-1-12.

SOUTHWEST TEXAS

SAN ANTONIO, Tex., Apr. 6.—Moody-Seagraves and William F. Morgan bailed their No. 1 Walsh, an offset west of the Humble's discovery well on the Piedras Pintas salt dome in Duval County, down to about 2,000 feet and got considerable oil and gas but also some salt water. They will attempt to plug off the bottom of the hole before bringing the well in, believing they drilled too deep into the sand.

Total depth is 3,617 feet and total depth of the discovery well of the Humble

is 3,623 feet, a difference of six feet but the elevation of the Moody-Seagraves and Morgan well is six feet lower and hence the sea level depth is the same. The discovery well topped the sand as nearly as could be told at 3,600 feet and the Moody-Seagraves and Morgan well drilled 22 feet into the sand. The last core showed a slight taste of salt. The discovery well has been making a small percentage of salt water.

The Moody-Seagraves and Morgan well is the first to test the sand since the bringing in of the discovery well and the showing has not discouraged the operators. Humble has made a location for its next well 90 feet north of the Moody-Seagraves and Morgan test.

MICHIGAN

SAGINAW, Mich., Apr. 6.—Bliss Petroleum Co.'s well on the Ulrich farm, Section 14, Saginaw Township, Saginaw County, a quarter of a mile northeast of the discovery well, averaged 25 bbls. daily for the past seven days under pump. The Saginaw Prospecting Co.'s four wells are pumping 50 bbls. daily.

The Sun Oil Co.'s well on the Weiss farm, a half mile north of the discovery well, was shot Thursday. When agitated by swabbing, it flowed, showing for the best well in the field.

The St. Clair Sanilac Prospecting Co. reports a showing of oil 5 miles west of Port Huron, St. Clair County, at a shallow depth.

UTAH

CASPER, Wyo., Apr. 6.—The Cane Creek well of the Midwest Refining Co. and Utah Southern Oil Co., drilled into the sand, flowed 38 gravity oil, estimated at 2,000 bbls. production. The location is in Section 6-27-21, San Juan County, about 20 miles south of Moab, Utah, close to the Colorado line and on the Grand River. The depth of the hole is 2,030 feet. The cement failed and the well is now shut in.

NORTH CENTRAL TEXAS

FORT WORTH, Tex., Apr. 6—Roeser & Pendleton's No. 1-A-84 Cook, north of Albany, in Shackelford County, is a new producer, making the second well in that pool for Roeser & Pendleton and the third producer in the pool. The new well is an offset to the east of the Humble Oil & Refining Co.'s No. 1 Cook. The new well is making 32 bbls. an hour from a sand topped at 1,293 feet and drilled to a total depth of 1,303 feet.

In northern Brown County, Moorman and other's No. 1 Byrd is a new producer from the Crosscut sand at 1,307 to 1,313 feet. It is making 100 bbls. flush. The Texas Company's No. 2 Dunn is also a producer from the 1,100-foot pay in the new pool northeast of Crusscut. It is making 30 bbls. an hour from 1,120 to 1,138 feet. The Prairie Oil & Gas Co.'s No. 1 Turner found a gas sand at 1,642 feet and drilled to 1,651 feet and is making an estimated 8,000,000 feet of gas daily.

In the Dibrell Pool, in northeastern Coleman County, the Midwest Exploration Co.'s No. 1 Dibrell is a new producer, making the third for that pool. It is making 9 bbls. an hour or about 225 bbls. daily from sand topped at 1,917 feet and drilled to 1,931 feet.

There are two new producers in the Nocona district of northern Montague County. The E. L. Smith Oil Co.'s No. 2 Maddox is in the sand at 910 feet and is making about 95 bbls. a day. The Texas Company's No. 4 Oldham is making 120 bbls. from the pay at 1,079 to 1,081 feet.

In northern Young County, Bridwell and others' No. 4 Street is estimated at 35 bbls. in sand at 1,281 to 1,286 feet.

The Robert Oil Corp.'s No. 1 Wood, in has been shot with 20 quarts of nitro the Olden district of Eastland County, from 1,692 to 1,702 feet and made two flows the first hour following the shot, with a total of 25 bbls. of oil. This well was reported a small producer last week, before the shot.

In Archer County, the No. 4-A Oldham of Cosden and the Consolidated Oil Co. swabbed 500 bbls. the first 18 hours from sand at 1,346 to 1,386 feet and No. 3-A, on the same lease, is making 125 bbls. from a total depth of 1,377 feet. Fisher and others' No. 9 Rogers, also in Archer County, is swabbing at the rate of 95 bbls. from 1,366 to 1,367 feet and the Roxana Petroleum Corp.'s No. 3 Cockrell is swabbing 90 bbls. from sand at 1,442 to 1,449 feet.

In Wilbarger County, the Phillips Petroleum Co. has three new completions on its Waggoner lease, recently taken over from the Landreth Production Co. The No. 3-G is making 150 bbls. from 1,911 to 1,914 feet. No. 1-HH, 100 bbls. at 2,533 to 2,541 feet, and No. 3-NN, 130 bbls. from 1,895 to 1,908 feet. The Prairie Oil & Gas Co.'s No. 2-A Waggoner, also in Wilbarger County, is a new completion, making 100 bbls. from the lime at 2,338 to 2,350 feet.

FORT WORTH, Tex., Apr. 6.—Magnolia Petroleum Co.'s No. 1 University, formerly Church & Fields, in Crane County, made one flow of 75 bbls. The well had been shut down for several days awaiting tubing and erection of storage and the flow was unaided.

TEXACO-CALIFORNIA NEGOTIATIONS ARE OFF

NEW YORK, Apr. 5.—Negotiations for a merger of the California Petroleum Co. and The Texas Company have been broken off, Amos I. Beatty, chairman of The Texas Company, and Jacques Vinmont, chairman of the executive committee of the California company, announced Monday.

Both officials indicated it had been found impossible to agree on satisfactory terms and that the discussions had been terminated by mutual consent.

TRY CONSERVATION OF NATURAL GAS PRESSURE

(Continued from Page 30)

pany's large wells in the Osage would have flowed much more oil eventually if they had been held down when they first came in and not allowed to produce at their capacity rate. This was proved true in the Powell Field, also.

Valuable Data

The I. T. I. Pool (if it proves to be a good pool) may furnish some of the most valuable data on this highly important controversy that has ever been contributed in the Mid-Continent. It is entirely too early to forecast the extent of the pool, but some competent observers are expecting it to be of considerable size and look for much larger wells than the discovery test. In the important matter of lease ownership, the area could hardly be better situated for a working agreement among operators as the accompanying map shows because all of the acreage adjacent to the Indian Territory Illuminating Oil Co.'s leases is owned by large concerns, all of whom are intensely interested in conservation and want high ultimate recovery rather than spectacular initial production. These concerns include the Carter Oil Co., the Gypsy Oil Co., the Amerada Petroleum Corp., the Barnsdall Petroleum Corp., the Tidal Oil Co. and Tidal-Osage Oil Co., the Mid-Continent Petroleum Corp., the Sinclair Oil & Gas Co., The Texas Company, the Marland Oil Co. of Oklahoma, the Prairie Oil & Gas Co. and the Empire Gas & Fuel Co. There isn't a "fly-by-night" outfit in the list, and if a "gentlemen's agreement is ever possible it should be effected in this pool.

Regardless of the future importance of this area, the pioneering company in this field deserves credit for its attempt to put into practice the theories which have been advanced lately on conservation of gas pressure and to show the public that the industry is awake and alert to prevent waste without outside interference.

The locations and wells drilling in the field, with their present status, are shown on the accompanying map.

NORTH CENTRAL TEXAS

(Continued from Page 39)

feet; No. 1-EE Waggoner, drilling at 2,500 feet; No. 2-QQ Waggoner, at 1,756 feet; No. 1-SS Waggoner, at 1,845 feet; No. 1-AAA Waggoner, at 1,560 feet; Plast and others' No. 1 Woodward, at 800 feet; Prairie Oil & Gas Co.'s No. 3-A Waggoner, spudding; Roxana Petroleum Corp.'s No. 7-A Waggoner, at 1,600 feet; No. 8-A Waggoner, at 1,160 feet; No. 1-D Waggoner, spudding; Shipley and others' No. 1 Waggoner, cleaning out at 1,480 feet; Sloan and others' No. 2 Waggoner, drilling at 1,400 feet; The Texas Company's No. 1 Guggisburg, at 560 feet; Texhoma Oil & Refining Co.'s No. 1 Waggoner, fishing at 2,195 feet; Tidal Oil Co.'s No. 1 Waggoner, drilling at 1,300 feet; Waggoner Refining Co.'s No. 1-A Waggoner, at 1,120 feet; Winnipeg Oil Co.'s No. 1 Waggoner, at 500 feet.

Jeff Davis County

Humble Dil & Refining Co.'s No. 1 McCutcheon, drilling at 590 feet.

Pecos County

Smith and others' No. 1 Devlin, drilling at 670 feet; Trans Pecos Oil Co.'s No. 2 Bennett, at 1,020 feet; Dixie Oil Co.'s No. 1 Herschenson, at 3,945 feet.

Crockett County

Cromwell and others' No. 2 Powell, drilling at 1,800 feet; No. 3 Powell, at 400 feet; Cosden company's No. 1 Noelke, at 2,055 feet; Humble Oil & Refining Co.'s No. 4 Powell, at 720 feet; J. K. Hughes Developing Co.'s No. 1 Powell, at 380 feet; Humphrey Oil Corp.'s No. 1 University, at 3,850 feet; Marland Oil Co.'s No. 1 Todd, at 460 feet; Roxana Petroleum Corp.'s No. 1 Powell, setting casing at 710 feet.

Sutton County

Chesapeake Oil Co.'s No. 1 Ellison, drilling at 1,060 feet.

Mitchell County

Mid-Kansas Oil & Gas Co.'s No. 1 Elwood, fishing at 2,670 feet; Magnolia Petroleum Co.'s No. 3 Adams, drilling at 2,885 feet; No. 1 Coleman, at 3,200 feet; No. 1 Kloh & Rumsey, at 1,820 feet; No. 1 Watson, setting casing at 1,574 feet; California company's No. 2 Adams, drilling at 2,370 feet; No. 4 Womack, at 2,675 feet.

Garza County

Emerald Oil Co.'s No. 1 Boren, drilling at 2,474 feet; Midwest Exploration Co.'s No. 1 Rogers, at 1,160 feet.

Howard County

Transcontinental Oil Co.'s No. 1 Roberts, drilling at 1,335 feet.

Loving County

P. V. Petroleum Co.'s No. 1 Chapman-Wheat, cleaning out at 4,272 feet.

Winkler County

Westbrook and others' No. 1 Hendrick, drilling at 665 feet.

Sterling County

Co-Operative Lease & Development Co.'s No. 1 Douthit, drilling at 2,490 feet; Chicago Texas Oil & Gas Co.'s No. 1 Durham, at 3,390 feet; Deep Rock Oil Co.'s No. 1 Clark, at 1,810 feet; Wrightsman Petroleum Co.'s No. 1 Collins, at 2,290 feet.

Coke County

Lipan Oil Co.'s No. 1 Rawlings, drilling at 1,006 feet.

Concho County

Kemberlin and others' No. 1 Schultz, drilling at 545 feet.

Irion County

Williams and others' No. 1 Ash Brothers, drilling at 465 feet.

Crane County

Marland Oil Co.'s No. 1 Cowden, drilling at 3,215 feet; Penn Texas Development Co.'s No. 1 Cowden, at 3,300 feet.

Reeves County

Humble Oil & Refining Co.'s No. 1 Kloh & Rumsey, underreaming; World Oil Co.'s No. 1 Kloh & Rumsey, fishing at 3,040 feet.

Ward County

Chesapeake Oil Co.'s No. 1 Marston, drilling at 2,050 feet.

Upton County

Hults and others' No. 1 Halff, fishing ot 3,140 feet; Marland Oil Co.'s No. 1 Benton Land Co., drilling at 570 feet; No. 2 Burleson at 265 feet; No. 3 Burleson, at 560 feet; No. 2 Sanger Brothers, at 1,685 feet; Marland and others' No. 1 Noelke, at 1,885 feet; Zoch and others' No. 1 Union Land Co., fishing at 3,045 feet; No. 1 Keith, showing oil at 2,340 feet.

PANHANDLE OUTPUT SHOWS GOOD GAIN

(Continued from Page 38)

tors, has been shot with 90 quarts of nitro at 2,895 to 2,932 feet and is making 100 bbls. daily. It may be drilled still deeper.

Phillips Petroleum Co.'s No. 1 J. A. Whittenburg is showing oil and making 15,000,000 feet of gas at 2,715 to 2,830 feet. At present the well is shut down. Skelly Oil Co.'s No. 1 J. A. Whittenburg is producing some oil from 2,893 to 2,934 feet. It made 80 bbls. in 12 hours but will be drilled deeper. Smith and others' No. 1 J. A. Whittenburg is making 4,000,000 feet of gas at 2,660 to 2,740 feet and the White Eagle Oil & Refining Co.'s No. 1 Smith is spraying oil from a total depth of 2,793 feet.

Up in Moore County, Cadman and others' No. 1 Sneed is spudding and No. 1, on the same lease of the Moore County Oil Co. is drilling at 350 feet. Landreth Production Co.'s No. 1 Sneed is spudded and shut down on account of stormy weather.

Hutchinson County Drilling

Canadian River Oil Co.'s No. 2 Kingsland is drilling at 600 feet; No. 4 Kingsland, at 300 feet; Canyon Oil Co.'s No. 2 J. A. Whittenburg, cleaning out at 1,905 feet; Coble-Whittenburg's No. 1 J. A. Whittenburg, setting casing at 220 feet; Cockrell-McIlroy Oil Co.'s No. 1 Smith, drilling at 1,700 feet; No. 2 Smith, at 375 feet; Dixon Creek Oil Co.'s No. 4 Smith, at 2,160 feet; Douglas Oil Co.'s No. 1 J. A. Whittenburg, at 360 feet; Fly-Blackburn Oil Co.'s No. 1 Weatherly, at 1,521 feet; Gates Oil Corp.'s No. 1 Kingsland, 2,500 feet; No. 2 Kingsland, 2,450 feet; No. 3, spudding; No. 4, spudding; Gibson Oil Corp.'s No. 1 Kingsland, underreaming; Golding Phillips Oil Co.'s No. 1 Hodges drilling at 2,500 feet; Heywood and others' No. 1 Cockrell, at 2,200 feet; Lenix and others' No. 1 Smith, at 2,905 feet; McIlroy Brothers' No. 3 Smith, at 2,400 feet; McIlroy & Herring's No. 2 Smith, at 1,400 feet; McMan Oil Co.'s No. 1 Johnson, at 800 feet; Middleton and others' No. 1 Smith, setting casing at 100 feet; Midwest Exploration Co.'s No. 1 Smith, drilling at 325 feet; No. 2 Smith, at 450 feet; Morton and others' No. 1 Johnson, at 475 feet; New Domain Oil Co.'s No. 1 Kingsland, at 550 feet; Phillips & Heywood's No. 1 Smith, cleaning out at 695 feet; Phillips Petroleum Co.'s No. 1 Johnson, spudding; Phillips Petroleum Co. and Gibson Oil Corp.'s No. 1 J. A. Whittenburg, spudding; Phillips Petroleum Co. and Parks' No. 2 J. A Whittenburg, drilling at 2,748 feet; Phillips Petroleum Co. and Pulaski Oil Co.'s No. 1 Johnson, drilling at 2,150 feet; Phillips Petroleum Co. and others' No. 1 Johnson, fishing at 2,940 feet; Phillips Petroleum Co.'s No. 2 J. A. Whittenburg, drilling at 2,797 feet; Prairie Oil & Gas Co.'s No. 2 Weatherly, at 2,650 feet; Roxana Petroleum Corp.'s No. 2-B Smith, at 320 feet; No. 2 Smith, at 2,150 feet; No. 3 Smith, at 1,230 feet; Skelly Oil Co.'s No. 3 J. A. Whittenburg, skidding rig after having drilled to 880 feet; J. L. Smith and others' No. 1 H. E. Smith, spudding; Spring Creek Oil Co.'s No. 1 Smith, drilling at 2,465 feet; The Texas Company's No. 1 Cooper, at 2,401 feet; No. 7 Burnett, underreaming; Triangle Oil Co.'s No. 1 Smith, drilling at 2,200 feet; Twin Six Oil Co.'s No. 2-A Kingsland, at 250 feet; No. 3 Kingsland, fishing at 380 feet; No. 4 Kingsland, fishing at 2,760 feet; No. 5 Kingsland, spudding; White Eagle Oil & Refining Co.'s No. 1 Johnson, drilling at 1,965 feet; No. 2 Smith, setting casing at 385 feet; No. 3 Smith, drilling at 615 feet.

Carson County

Amarillo Oil Co.'s No. 2-B Bivins, drilling at 2,940 feet; Gates Oil Corp.'s No. 2 Burnett, fishing at 2,957 feet; Magnolia Petroleum Co.'s No. 2 Burnett, drilling at 2,045 feet; Marland Oil Co.'s

No. 1-A Burnett, showing oil at 3,090 feet; No. 1-B Burnett, making 15,000,000 feet of gas at 2,550 feet; The Texas Company's No. 4 Mary Couts Burnett, fishing at 2,879 feet.

Potter County

Amarillo Oil Co.'s No. 4-A Bivins, fishing at 3,005 feet; Prairie Oil & Gas Co.'s No. 1 Lee Bivins, drilling at 3,400 feet.

Gray County

Clark and others' No. 1 Merten, drilling at 1,555 feet; Empire Gas & Fuel Co.'s No. 1 Heitholt, cleaning out after second shot at 3,258 feet; The Texas Company's No. 1 Brown, drilling at 2,405 feet; No. 2 Saunders, cementing casing at 1,838 feet; Wilcox and Pampa Oil Co.'s No. 3 Worley & Reynolds, drilling at 1,080 feet.

Wheeler County

Midwest Exploration Co.'s No. 2 Porter, drilling at 800 feet; Vaughan and others' No. 1 O'Gorman, 500 feet.

BUYS PULASKI CO.

The Texas Company has purchased the Oklahoma and Kansas holdings of the Pulaski Oil Co. for approximately $3,000,000.

LITTLE CHANGE IN REFINERY OPERATIONS

(Continued from Page 31)

Tidal Refining Co., Drumright	6,500	7,000	Shut down
Transcontinental Oil Co., Boynton	2,500	2,000	2,000
Transcontinental Oil Co., Bristow	6,000	3,500	4,500
Tonkawa Petroleum Co., Tonkawa	2,500	900	900
Western Oil Corp., Beckett	1,500	1,000	1,500
Yale Oil Corp., Yale	1,500	500	550
Total	174,200	162,430	153,150

*Average daily runs lower.

REFINING OPERATIONS IN NORTH CENTRAL TEXAS
(Plants which have been in operation during the past year.)

Name and location—	Daily Capacity	Runs April 1	Runs March 1
Amarillo Refining Co., Amarillo	5,000	3,000	3,000
American Refining Co., Wichita Falls	7,000	4,500	4,400
Big Four Refining Co., Panhandle	1,500	850	800
Bridgeport Refining Co., Bridgeport	1,000	Shut down	Shut down
Buffalo Refining Co., Sherman	500	150	150
Col. Tex. Refining Co., Colorado	5,000	4,000	4,250
Crystal Petroleum Co., Burkburnett	1,000	250	250
Dale Oil & Refining Co., Electra	3,000	Shut down	1,500
Le Deon Refining & Pipe Line Co., De Leon	1,500	Shut down	Shut down
Falls Refining Co., Wichita Falls	1,500	1,100	1,100
Four States Refining Co., Texarkana	750	Shut down	Shut down
Gulf Refining Co., Fort Worth	15,000	6,500	6,500
Hagaman Refining Co., Tiffin	2,000	250	275
Humble Oil & Refining Co., Burkburnett	4,000	2,300	2,200
Humble Oil & Refining Co., Hearne	10,000	Shut down	Shut down
Iowa Park Producing & Refining Co., Iowa Park	2,500	1,500	1,350
Kent-Middleton Refining Co., Corsicana	2,500	1,100	1,000
Magnolia Petroleum Co., Fort Worth	12,000	6,700	6,700
Magnolia Petroleum Co., Corsicana	10,000	3,000	3,000
Megargel Refining Co., Megargel	2,000	300	350
Mexia Oil & Refining Co., Mexia	600	Shut down	Shut down
Miller Petroleum Co., Wichita Falls	3,000	2,000	1,900
National Refining Co., Texas, Greenville	2,000	Shut down	Shut down
Noble Oil & Gas Co., Burkburnett	5,000	2,600	2,500
Olney Oil & Refining Co., Olney	1,200	1,000	1,100
Oriental Refining Co., Dallas	6,000	250	250
Oriental Refining Co. (Trinity), Dallas	5,000	2,800	2,800
Orient Petroleum Co., Wichita Falls	2,000	1,200	1,200
Panhandle Refining Co., Wichita Falls	4,000	2,000	2,000
Paris Refining Co., Paris	250	Shut down	Shut down
Peerless Refining Co., Wortham	400	Shut down	Shut down
The Petroleum Corp., Electra	2,000	Shut down	Shut down
Primrose Refining Co., Wichita Falls	1,500	Shut down	600
Producers Refining Co., Gainesville	5,000	4,000	4,000
Simms Oil Co. (Clayton), Dallas	4,500	4,000	3,800
Star Refining & Producing Co., Fort Worth	1,500	Shut down	700
Sunshine Consolidated Oil Co., Wichita Falls	2,500	Shut down	Shut down
Sweetwater Refining Co., Sweetwater	500	Shut down	Shut down
*Tidal Western Refining Co., Burkburnett	3,000	2,500	Shut down
The Texas Company, Dallas	15,000	10,000	10,000
Texhoma Oil & Refining Co., Wichita Falls	7,000	4,500	4,500
Tiger Refining Co., Breckenridge	1,500	Shut down	Shut down
Transcontinental Oil Co., Fort Worth	5,000	2,000	2,000
Waggoner Refining Co., Electra	3,400	2,700	2,500
White Eagle Oil & Refining Co., Fort Worth	5,000	4,000	2,000
Wilson Brothers Refining Co., Wichita Falls	2,500	Rerun	Rerun
Total	177,100	81,150	80,075

*Resumed operations March 6 rerunning 2,000 bbls. daily.

REFINING OPERATIONS IN KANSAS
(Plants which have been in operation during the past year.)

Name and location—	Daily Capacity	Runs April 1	Runs March 1
Arkansas City Refining Co., Arkansas City	8,000	1,500	Shut down
Barnsdall Refineries, Inc. (Waite Phillips), Wichita	5,000	Rerun	3,000
Commonwealth Oil & Refining Co., Moran	1,800	Shut down	Shut down
Derby Oil & Refining Co., Wichita	5,000	3,200	3,215
El Dorado Refining Co., El Dorado	3,500	2,500	2,500
Golden Rule Refining Co., Wichita	1,000	500	500
Grant Oil Co., Augusta	1,500	Shut down	Shut down
Kanotex Refining Co., Arkansas City	9,000	6,800	7,500
Manhattan Oil Co. (K. C. Ref. Co.), Kansas City	5,000	3,500	3,200
Miller Petroleum Co., Humboldt	2,000	Shut down	180
National Refining Co., Coffeyville	6,000	6,000	6,000
Peerless Oil & Refining Co., Chanute	3,000	2,000	2,100
Red Bird Refining Co., Fredonia	200	Shut down	Shut down
Roxana Petroleum Corp., Arkansas City	19,500	9,850	11,400
Sinclair Refining Co., Coffeyville	6,500	6,500	6,500
Sinclair Refining Co., Argentine	8,000	4,000	4,000
Skelly Oil Co., El Dorado	14,000	8,400	8,400
Standard Oil Co. of Kansas, Neodesha	12,000	9,000	11,000
United Oil & Refining Co., Huntington	2,500	Shut down	Shut down
Vickers Petroleum Co., Potwin	3,500	2,100	2,600
West Kansas Refining Co., Russell	2,500	625	2,000
White Eagle Oil & Refining Co., Augusta	6,500	5,000	4,700
West Missouri Group—			
Wilhoit Refining Co., Joplin	2,000	1,200	1,500
Total	130,900	72,675	80,195

REFINING OPERATIONS IN NORTH LOUISIANA
(Plants which have been in operation during the past year.)

Name and location—	Daily Capacity	Runs April 1	Runs March 1
Crystal Oil Ref. Corp. (Caddo Central), Shreveport	3,500	3,500	3,000
Crystal Oil Ref. Corp. (Caddo Central), Shreveport	5,000	5,000	5,000
Great Southern Refining Co., Ardis	2,000	Shut down	600
Louisiana Oil Refining Corp., Shreveport and Bossier	15,000	14,500	12,000
Shreveport Producing & Refining Co., Shreveport	5,500	4,000	4,200
*The Texas Company, Ardis	7,000	6,500	6,000
Total	37,500	33,500	31,400

*Topping.

REFINING OPERATIONS IN ARKANSAS
(Plants which have been in operation during the past year.)

Name and location—	Daily Capacity	Runs April 1	Runs March 1
Cross Refining Co., Smackover	2,500	3,000	3,000
Home Refining Co., Camden	500	75	75
Home Oil & Refining Co., Hot Springs	500	50	50
Houston Oil Co., Camden	5,000	2,100	2,000
Kettle Creek Refining Co., Pearson	4,000	3,000	3,900
Lion Oil & Refining Co., El Dorado	10,000	7,000	8,700
McMillan, Fehlman & Oliver, El Dorado	1,500	600	900
Ouachita Valley Refining Co., El Dorado	1,500	650	575
Root Refineries, El Dorado	2,500	1,980	1,970
Total	30,000	18,455	21,170

NICHOLAS URGES JOBBERS TO JOIN IN COOPERATIVE DISCOUNT PLAN

By Neil Williams

CHICAGO, April 6.—With one of the largest attendances on record of the organization, the annual industrial conference of the National Petroleum Marketers Association opened at the Congress Hotel here today. The association will be in session three days.

Attracted to Chicago with the expectation of solving the many problems of the Association as to its attitude on quantity discount gasoline contracts, several hundred marketers and jobbers were on hand at the opening session Tuesday afternoon. As scheduled, these contracts were the sole topic of discussion at both the afternoon and evening sessions. While no definite policy was decided on, all phases of quantity discounts were brought out in the heated discussions open to all those present. However, it was the consensus of practically all that the association must recognize the existence of the discount practice and that its members must cooperate to meet the competition.

This opinion was expressed most clearly in the opening remarks of L. V. Nicholas, secretary of the association, who also urged the members to get together on some plan of discount sales. Mr. Nicholas recently proposed a plan for an association clearing house through which contract sales of any member would be honored by any other member.

With the exception of a meeting of directors the entire morning was given over to registration of the marketers and jobbers and the renewing of old acquaintances and inspection of the numerous equipment exhibits. At the directors' meeting only routine business was conducted and few plans made for the procedure of the conference.

PETROLEUM SUPPLY AND DEMAND IN FEBRUARY

	Dec., 1925	Jan., 1926	Feb., 1926	Feb., 1925
Current Supply—				
Domestic Crude oil	60,943,000	59,670,000	54,564,000	54,045,000
Imports, crude and refined	5,130,285	5,937,224	5,687,989	7,287,012
Total current supply	66,073,285	65,607,224	60,251,989	61,332,012
Demand—				
Domestic and export—crude and refined	71,519,814	60,829,100	61,168,819	55,185,017
Total change in crude and refined storage	*5,446,529	4,778,124	*916,830	1,970,893
Source of Change in Storage—				
1—Pipe line and tank stocks	*4,347,000	522,000	*3,568,000	322,039
2—crude oil at refineries	13,000	3,624,000	*347,000	579,798
3—Foreign crude not at refineries	*172,000	31,000	8,000	*69,000
4—Refined products at refineries.	*940,529	601,124	2,990,170	5,314,158
Total change in storage	*5,446,529	4,778,124	*916,830	6,146,995
On a Daily Average Basis—				
The current supply was	2,131,396	2,116,362	2,151,857	2,190,429
The demand was	2,307,091	1,962,229	2,184,601	1,970,893
Av. daily surplus or shortage	*175,695	154,133	*32,744	219,536
Total Crude and Refined in Storage—				
(a)—Pipe line and tank farm:				
East of California	264,724,000	260,181,000	256,662,000	275,992,000
In California, light oil	44,323,000	44,215,000	44,877,000	42,706,244
(1) In California, heavy oil	81,806,000	86,979,000	86,268,000	57,777,466
(b)—Crude at refineries east of California	27,157,000	30,781,000	30,434,000	32,946,179
(c)—Foreign crude not at refineries	407,000	438,000	446,000	524,000
Total crude stocks	418,417,000	422,594,000	418,687,000	409,945,889
(d)—Refined products at refineries:				
Gasoline	39,245,905	41,643,405	45,206,167	38,545,035
(2) Fuel oil	24,681,405	23,266,143	21,444,524	18,949,343
All other products	56,369,804	55,988,690	57,237,717	53,977,229
Total refined stocks	120,297,114	120,898,238	123,888,408	111,471,607
Grand total in storage	538,714,114	543,492,238	542,575,408	521,417,496

(1) Includes refined fuel oil in storage in California.
(2) For east of California only.

Please Note—Decreases are shown by * and **black face** type. Increases are in light face type. Also note, in comparing **January, 1926**, in the above table with January, 1926 in the table on page 31 of the March 11 issue of The Oil and Gas Journal, that California stocks of heavy crude and fuel oil were increased 4,113,000 bbls.—and that "refined stocks at refineries" were increased 3,200,000 bbls. These changes are reflected in the revised figures under "source of change in storage" in the above table.

RAPID ADVANCE IN OKLAHOMA FUEL OIL

(Continued from Page 28)

for the satisfactory price situation which prevails in most other refined products. Greater gasoline recovery has, of course, meant percentage losses in the output of other products.

For the entire country the increase in fuel oil and kerosene demand has not been as great as that of gasoline. Yet due to the fact that refiners have endeavored to get all the material possible to sell as gasoline, a situation developed in regard to supply and demand which has brought much higher fuel oil and kerosene prices than were in effect a year ago.

Many market students are wondering just how long a price situation with $1.40 fuel oil, 7-cent kerosene, 4½-cent gas oil and 10-cent gasoline will continue. There are those who declare that cracking fuel oil or gas oil to obtain this low-priced gasoline is not justified. At least two instances can be cited in Oklahoma where refiners are selling their cracking stock rather than refining it. It is impossible to pick out any one plant and state that its cost figures in regard to gasoline are representative. It seems reasonable to conclude, however, that the relative price situation among the several refined products and crude oil is abnormal and gasoline will either advance or other products will experience a price decline.

58-60 U. S. Motor gasoline, after hold-

The Cross Cracking Process

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If you do you must know that they buy the Cross Process
because it gives the maximum Profit.

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A Western Refiner phoned our office and said---

"—I've been reading some of the broad statements you folks have been making in your advertisements regarding the MASTER MIXER HEAD—send one of your engineers over to me—I want some information."

---and we proved to him that he could save plenty on Gasoline Treating Costs

The MASTER MIXER HEAD embodies scientific accuracy, economy and efficiency—it is the result of years of experience and research—a card will bring full detailed information.

Petroleum Appliance Company

1419 West 8th St. Los Angeles

ing at a low of 10¼ cents, was available from several sources at 10 cents the first of the week. Several refiners were still quoting 10¼ cents to the trade. The sellers generally blamed the weather for slow domestic movement. Several stated that the latter part of March and the first few days of April, they sold all the gasoline available for April shipment. However, the buyers, due to the weather, are not ordering out their cars and this has forced a greater accumulation at refineries than was expected.

The 60-62 400 grade was offered exporters as low as 11⅛ cents, with domestic offers at 11 cents. One exporter purchased a small amount last week at a reported price of 11⅛ cents. Refiners were slow in reducing their export price on 64-66 375, but quotations at 12¼ and 12½ cents apparently did not interest the buyers. The domestic grade was available at 12 cents and 390 at 11½ cents. It was believed that some export buying would develop at 12 cents for 375 end point.

Naphtha sellers were forced to lower their price ⅛ or ¼ cent.

Fuel and Gas Oils

The climb in fuel and gas oils prices came somewhat as a surprise. Buyers believed that the products which had advanced the previous week would continue firm. They found, however, the latter part of last week that very little was available for prompt shipment in any part of the Mid-Continent. Gas oil is in demand for cracking and several refiners are storing while their cracking units are being completed.

On Monday $1.35 was low on any grade with a price range up to $1.60 for the higher gravities. The low on gas oil was 4⅛, with a price range up to 4½ cents for the light grades. Fuel oils and gas oil occupy a strong statistical situation in the Mid-Continent, but most market observers are doubtful if present prices can be maintained.

Kerosene and Distillates

Kerosenes were stronger Monday and Tuesday. Some explained the strength as a reflection of the higher fuel prices. The low on a water white grade of 41-43 was 6¾ cents and 7⅛ on 42-43. Most sellers advanced their distillate quotations along with kerosene, although there was no noticeable improvement in the demand.

Natural Gasolines

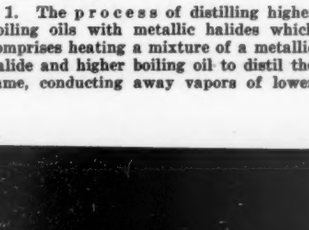
The price trend in natural gasolines was downward. Several manufacturers reported that they had not changed their prices of last week, but there were a few at least willing to shade quotations to secure immediate shipping instructions. Eight cents both high and low on Grade C. The B grades were available at 8⅛ cents, with one sale reported at 8 cents. The price range on the A grades was from 9 to 9⅛ cents.

Recent Patents

(Continued from Page 140)

from said vapors, which latter are supplied by removing the water collected from the condensed vapors, and continuously circulating through said vapors the hydrocarbons thus obtained.

1,578,049. Process of Distilling Oils With Volatile Catalysts. Almer McDuffie McAfee, Port Arthur, Tex., assignor to Gulf Refining Co., Pittsburgh, Pa., a Corporation of Texas. Filed Jan. 20, 1922. Serial No. 530,580. 15 Claims. (Cl. 196—54.)



1. The process of distilling higher boiling oils with metallic halides which comprises heating a mixture of a metallic halide and higher boiling oil to distil the same, conducting away vapors of lower boiling oils formed, condensing the vapors of lower boiling oils and intimately contacting the said vapors prior to their condensation with added petroleum hydrocarbon.

TANK WAGON SHOWS GAIN IN APRIL OVER MARCH

(Continued from Page 138)

GASOLINE PRICES EFFECTIVE APRIL 1, 1926

Table showing gasoline tank wagon prices as of April 1, 1926, exclusive of taxes, in 50 representative cities, including the amount and the date of changes since March 1, 1926. High and low prices and State taxes also given.

	Prices Mar. 1	March Changes		April 1	High and Low 1925		High and Low 1924		Taxes Apr. 1
Birmingham, Ala.	18.0	....	....	18.0	20.0	13.0	20.0	13.0	2.0
Phoenix, Ariz.	20.0	11 22.0	....	22.0	20.0	18.3	20.0	16.0	3.0
Little Rock, Ark.	14.5	....	....	14.5	19.0	12.0	18.0	13.0	4.0
San Francisco, Cal.	14.0	11 16.0	....	16.0	15.0	13.0	15.0	11.0	2.0
Denver, Colo.	18.0	....	....	18.0	20.0	12.0	19.0	12.0	2.0
Hartford, Conn.	18.0	....	....	18.0	21.0	15.0	20.0	13.0	2.0
Dover, Del.	17.0	....	....	17.0	21.0	15.0	20.0	14.0	2.0
Jacksonville, Fla.	17.0	....	....	17.0	19.0	12.0	19.0	12.0	4.0
*Atlanta, Ga.	19.0	....	....	19.0	21.0	14.0	19.0	11.0	3.5
Boise, Idaho	22.0	12 23.0	....	23.0	21.5	19.0	22.5	18.0	3.0
Peoria, Ill.	17.2	....	....	17.2	19.2	10.5	18.2	13.0	...
Chicago, Ill.	16.0	....	....	16.0	18.0	13.0	18.0	13.0	...
Indianapolis, Ind.	17.2	....	....	17.2	19.2	13.2	18.2	13.2	3.0
Des Moines, Iowa	17.5	....	....	17.5	19.5	13.5	18.5	13.5	2.0
Wichita, Kans.	16.3	....	....	16.3	18.8	8.8	17.8	12.8	2.0
Louisville, Ky.	18.0	....	....	18.0	19.0	12.0	19.0	12.0	5.0
New Orleans, La.	14.0	....	....	14.0	18.5	11.5	16.5	11.5	3.0
Augusta, Me.	18.0	....	31 19.0	19.0	22.0	15.0	19.0	13.0	3.0
Baltimore, Md.	16.0	....	....	16.0	19.0	13.0	19.0	13.0	2.0
Springfield, Mass.	18.0	....	....	18.0	21.0	15.0	20.0	13.0	...
Detroit, Mich.	17.8	....	....	17.8	19.8	13.8	18.8	13.8	2.0
Duluth, Minn.	18.5	....	....	18.5	20.5	13.5	19.2	14.5	2.0
Natchez, Miss.	16.5	....	....	16.5	18.5	11.5	18.5	11.5	4.0
Kansas City, Mo.	16.9	....	....	16.9	18.9	12.9	17.9	11.9	3.0
Helena, Mont.	22.0	....	....	22.0	24.0	18.0	23.0	18.0	2.0
Omaha, Neb.	16.25	....	....	16.25	19.25	10.0	18.25	11.0	2.0
Reno, Nev.	17.5	11 19.5	....	19.5	18.5	16.5	18.5	14.5	4.0
Newark, N. J.	16.0	....	....	16.0	19.0	13.5	19.5	13.5	...
Albuquerque, N. Mex.	21.5	....	....	21.5	23.5	19.5	23.0	18.0	3.0
New York, N. Y.	18.0	....	31 19.0	19.0	22.0	15.0	20.0	14.0	...
Charlotte, N. C.	17.0	....	....	17.0	20.0	12.0	19.0	12.0	4.0
Fargo, N. D.	19.9	....	....	19.9	20.9	14.9	19.6	14.9	1.0
Cleveland, Ohio	19.0	....	....	19.0	18.5	15.0	20.0	15.0	2.0
Tulsa, Okla.	15.0	11 14.0	....	14.0	18.0	9.5	18.0	9.5	3.0
Portland, Ore.	14.0	11 16.0	....	16.0	19.0	13.0	16.0	12.0	3.0
†Philadelphia, Pa.	17.0	....	....	17.0	21.0	15.0	20.0	14.0	2.0
Providence, R. I.	18.0	....	....	18.0	22.0	15.0	20.0	13.0	1.0
Charleston, S. C.	17.0	....	....	17.0	20.5	12.5	19.0	12.5	5.0
Huron, S. D.	16.0	....	....	16.0	20.0	13.0	20.0	15.0	3.0
Memphis, Tenn.	15.0	....	....	15.0	18.0	10.5	18.0	12.0	3.0
Dallas, Tex.	14.0	....	....	14.0	18.0	10.0	17.0	9.0	1.0
Salt Lake City, Utah	20.0	12 21.5	....	21.5	21.5	17.5	21.5	16.5	3.5
Burlington, Vt.	18.0	....	31 19.0	19.0	22.0	15.0	19.0	13.0	2.0
Norfolk, Va.	17.0	....	....	17.0	20.0	14.5	19.0	14.5	4.5
Washington, D. C.	16.0	....	....	16.0	19.0	14.0	19.0	14.0	2.0
Charleston, W. Va.	16.5	....	....	16.5	19.0	14.0	19.0	14.0	3.5
Milwaukee, Wis.	17.1	....	....	17.1	19.1	13.1	18.1	13.1	2.0
Casper, Wyo.	18.0	....	....	18.0	20.0	14.0	19.0	14.0	2.5
Seattle, Wash.	14.0	11 16.0	....	16.0	15.0	13.0	16.0	12.0	2.0
Minneapolis, Minn.	18.2	....	....	18.2	20.2	13.2	18.9	12.0	2.0
Average price	17.267	....	....	17.557	16.667	16.638	8.99	13.27	2.43

*Does not include ½-cent inspection fee. †Tax paid by retail dealer.

SPECIAL PROCESS FOR RECOVERING LUBS

(Continued from Page 140)

The larger collecting pans may be fitted with drain pipes leading to a sump tank, while the small pans or trays may be emptied by hand whenever a sufficient quantity of oil has been collected. This practice has the advantage that the engine room is more easily kept clean and free from oil on floor plates and gratings.

"Where oils are recovered in this way the engineer often finds it worth while to discontinue the use of water on the bearings, in order to reduce the amount of emulsion formed and thereby simplify the purification process.

"For the purification of recovered bearing oils several methods and types of apparatus may be used. In a settling tank a pure mineral oil will separate from water and heavy impurities, but this method alone is not effective in breaking up an emulsion of a compounded oil with water. The centrifugal separator acts on the same principle as a settling tank, except that the force of gravitation is replaced by centrifugal force, which is much more powerful. In filters, the oil is passed through cloth or other porous material, in order to remove impurities.

"In some types of purifying apparatus, oil is washed by passing it through water. For the removal of particles of iron and steel, the oil may be passed between the poles of strong magnets. Chemical treatment and heating are often employed in conjunction with one or more of the methods just mentioned.

To Dissolve Emulsions

"On steamships equipped with reciprocating engines, the bearing oil recommended for the majority of purposes is strongly compounded and readily forms an emulsion with any water that may be in the bearing. For this reason it is important that the method of purification be adapted to break up the emulsion as well as to separate water and impurities from the oil. For this purposes the following method has been found useful.

"The used oil collected, as already explained, is placed in a vertical tank of 10 to 20 gallons capacity, which is fitted with a steam heating coil. Some of the water readily separates from the oil and is drained off from a point a little above the bottom of the tank. When the tank is about three-fourths full of emulsion, oil and water, a 25 per cent salt solution is added in the proportion of one part salt solution to four of the original mixture. Steam is then admitted to the heating coil under pressure and the contents of the tank are quickly brought to a boiling condition.

"The steam supply is then restricted so that the boiling ceases and the tank is kept hot for about an hour and a half, after which the steam inlet is completely closed. After this treatment the emulsion is found to be broken, permitting the oil to rise to the top. This oil may be skimmed off and passed through an ordinary filter or cloth strainer, after which it is again ready for use. On the bottom of the tank there remains a semi-liquid sludge which maye be used for the lubrication of the stern tube.

"This process is more quickly and thoroughly accomplished if a centrifugal separator is used. After the mixture of emulsion, oil and water has been boiled with the salt solution, it is passed through the centrifugal separator from which the purified oil, the water and the semi-liquid sludge may be drawn separately.

"The purification process described results in very little loss of oil, and the purified oil is found to be clean and ready for use a second time for the lubrication of the engine or auxiliaries. A small quantity of fresh oil is added to each batch to make up for losses."

May Suspend Sales Of Osage Leases By Bill Now Pending

WASHINGTON, D.C., Apr. 3.—Senator Harreld by request introduced a bill in the Senate (S. 2709) to amend section 1 of the act of March 3, 1921, which provides that the Secretary of the Interior may reduce the area to be offered annually for oil leases hereunder or suspend the offer of leases for not exceeding two years at any one time when in his opinion an over-production of oil or inadequate prices therefor make such extension or suspension desirable in the interest of the Osage Nation.

This bill is intended to protect the Indians against the legislation forcing the sale of oil leases in the Osage regardless of the market's demand for oil. It is recognized that this legislation not only tends to disorganize the oil market but that it is disastrous to all efforts to obtain a proper profit for the Indians from the sale of their oil holdings. This bill introduced by request has now been reported favorably by Mr. Harreld, from the Committee on Indian Affairs, and it is on the calendar of the Senate awaiting action by that body.

ALLENBY SEES ALBERTA GUSHER

CHATHAM, Ont., Apr. 3.—In connection with their visit to Calgary, Viscount and Lady Allenby visited the Turner Valley oil field, accompanied by T. Draper, of Imperial Oil, Ltd., and S. J. Davies, Government geologist. Viscount Allenby is High Commissioner for Palestine and won distinction in Egypt and Palestine in the war.

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Type of Oil Burners Depend on Need

Users Should Have Thorough Knowledge of Their Operating Requirements Before Installing Equipment. Two General Divisions

By R. S. Walde
Superintendent Interocean Oil Co.

Several months ago an article, by the writer, appeared in The Oil and Gas Journal on "The Uses of Fuel Oil." This article brought out the fact that fuel oil is being used in increasingly more industries. With this increased demand for fuel oil it is only natural that attention should be directed towards efficiently constructed fuel oil burners.

The principal function of a fuel oil burner is to atomize the oil. The more complete this atomization is, the more efficient the burner is, assuming that the original expense of installation and the

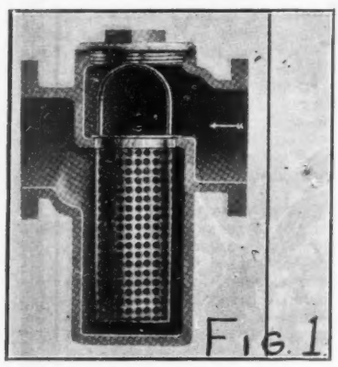


Fig. 1—Oil Strainer.

expense of operation are taken into consideration.

Early history of the development of the fuel oil burner relates various lines of endeavor. It was thought at one time that the most efficient way to burn oil was to heat it to a complete vaporization temperature and then burn the vapors. The greatest objection to this system was that too much carbonization took place and the equipment would become congested with this free carbon. Another drawback was the loss of some heat in bringing the oil to where it would completely vaporize.

After this system of vaporizing the oil failed to give the desired results, and after various other experiments were made, the inventors finally concentrated

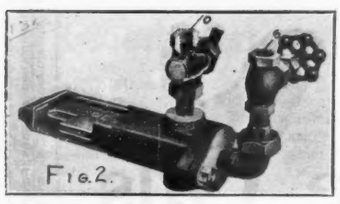


Fig. 2—Low Pressure Burner.

their efforts in two definite directions, namely, (1) using steam or air spray to vaporize the oil, and (2) vaporizing the oil by a mechanical contrivance. And so, at the present time all recognized oil burners can be put into one of these two classes, or a combination of both.

Steam or Air Spray

In this system the burner is constructed so that the steam or air comes in contact with the oil. The rush of steam or air causes the oil to be broken up into finely divided particles, thus atomizing it. Hundreds of designs are in use today but they all fall under the following types: the drooling type, the chamber type, the injector type, and the projector type. In the drooling type the oil is released directly above the steam or air and drips down upon it and is thus carried away and broken up. In the chamber type the oil and steam or air are mixed in an internal chamber and then pass out together through an orifice. In the injector type the steam or air is released ahead of the oil. The flare of the stream causes a suction which draws the oil into the stream. In the projector type the steam or air is released behind the oil and the stream sort of brushes the oil from the oil orifice.

In general neither of these types has any great advantage over the other. The last two types can be more easily made adjustable so that the flame can be varied to suit the conditions. The distance between the oil orifice and the steam or air orifice can be varied to change the flame from a short flare to a long flame. The change of the size of orifice can also be used to change the flame. The nozzles on these burners are of various designs. Some have spiral veins on the inside to give the flame a centrifugal action, while others have an inside or outside cone to produce a flaring action. Pepper-box nozzles and various other dsigns are used, all of which tend to aid in atomization.

Mechanical Atomization

Since every industry using fuel oil burners has either steam or the power to create an air jet, it is needless to say that air or steam atomizing burners can always be used. However, the item of

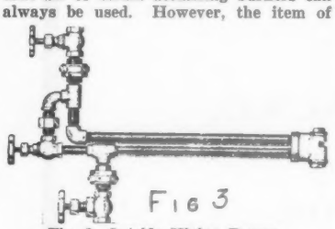


Fig. 3—Outside Mixing Burner.

furnishing the burner with steam or air is no small one in terms of dollars and cents, especially in a plant or industry where thousands of gallons of fuel oil are burned daily. To eliminate this item, mechanical burners are used. Here the atomization is done mechanically. The oil may be forced under great pressure through a very small orifice which will break it up into the fine particles, or the oil may be brought in contact with a revolving drum or revolving fan (not air fan which is used in air spray atomization) and thus broken up.

Accessories to Burners

Before going into the details of specific types of burners it should be mentioned that certain accessories will increase the efficiency, regardless of the type of burner used. Although it has been shown that it is impracticable to heat the oil to a temperature at which it will completely vaporize, it is of a distinct advantage to heat it up to 250 degrees Fahrenheit to 300 degrees Fahrenheit, using waste heat such as from chimney duct or exhaust steam. In addition to the actual saving of fuel there is the advantage of the oil's flowing more freely and thus reducing the possibility of clogging the burner.

Strainers, such as Figure 1, should be put on the fuel line to take out sediment before the oil is delivered to the burner. These should be placed in convenient positions so they can be easily cleaned. Many plants use twin strainers so that one can be cleaned while the other is in use.

If a pressure system is used relief valves can be installed to insure an even pressure. Where a low pressure is required a convenient method to produce an even pressure is to erect a standpipe, 4 to 8 inches in diameter, depending upon the capacity. This standpipe is made of a length sufficient to produce the desired pressure. The delivery pump keeps this standpipe full by means of an overflow at the top, thus holding an even pressure at the burner.

Gravity Type

Figure 2 represents a low pressure burner where steam is used to atomize the fuel. This burner is typical of the simple type of burner in which the oil flows to the burner by gravity through valve O. It is picked up by the steam as it passes out of the burner orifice. Practically all of the atomization takes place outside of the burner.

This simple type of burner is used for rough oil field work and temporary work. It requires no extensive installation, no use of air blowers, pumps and motors, and can be put into operation quickly. It has no adjustments and is therefore fool proof and needs no skill in operation. It must be said, however, that heating efficiency is much less than in the more elaborate types.

Outside Mixing

Figure 3 is an outside mixing burner. The oil and steam come in contact with each other at the atomizer or lip of the burner where it is thoroughly atomized.

This burner has a very wide range of load for a simple type of burner and is especially constructed for boilers having a short fire box, or where a medium length flame is preferable to a long rolling flame.

It is constructed with a by-pass valve in the head of the burner for blowing out the oil and leaving a clean burner when shutting down or for cleaning the burner when it becomes clogged.

Pressure Type

In this type of burner (Figure 4) the oil is first forced to the burner under

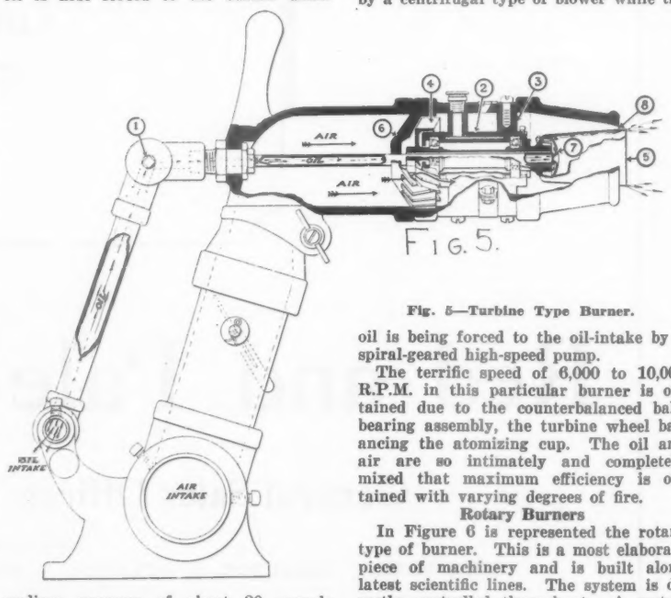


Fig. 5—Turbine Type Burner.

medium pressure of about 20 pounds through opening "O." The oil then travels through the inner core to the slotted opening "E," where it is mixed with the air or steam, either of which can be used. The air or steam enters through the opening "A," and travels around the core carrying the oil. The two-spiral vanes, "V," give the air or steam a whirling motion just before it comes in contact with the oil. This produces greater atomization, part of which takes place inside of the burner.

Turbine Type

Figure 5 illustrates the turbine type of fuel oil burner. It consist of a ball-bearing container (2) which is securely fastened by projecting lugs (3) to the housing in such a manner that the turbine wheel (4) counterbalances the atomizing cup (5) which enables it to obtain the high speed of 6,000 to 10,000 cup-revolutions per minute. This makes for an exceptionally high degree of atomization.

A stationary deflector (6) at the rear of the turbine wheel and overlapping it, deflects the air in jets at the most efficient angle, thus eliminating the retarding action of the eddy currents always found in a column of moving air.

Inside the cup, securely fastened to it,

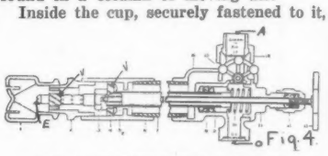


Fig. 4—Medium Pressure Burner.

is a concave-convex oil distributing disc (7.) The fuel oil coming from inside the fuel oil delivery tube and the air coming from the outside of this tube, impinge against this disc and are partially mixed before striking the inside of the atomizing cup, thus delivering the air and oil to the cup in an emulsified form.

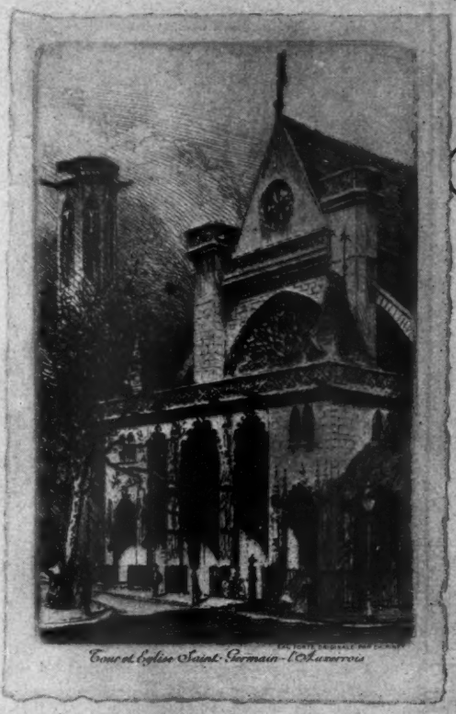
When the mixture of oil and air (which is thinly spread over the inside surface of the cup) leaves the mouth of the cup it takes up additional oxygen from the column of air (8.) In this highly combustible state the oil vapors immediately flash into gas and ignite, making a clear and intense flame.

The air is forced into the air-intake by a centrifugal type of blower while the oil is being forced to the oil-intake by a spiral-geared high-speed pump.

The terrific speed of 6,000 to 10,000 R.P.M. in this particular burner is obtained due to the counterbalanced ball-bearing assembly, the turbine wheel balancing the atomizing cup. The oil and air are so intimately and completely mixed that maximum efficiency is obtained with varying degrees of fire.

Rotary Burners

In Figure 6 is represented the rotary type of burner. This is a most elaborate piece of machinery and is built along latest scientific lines. The system is directly controlled throughout. A motor, installed directly below the pressure gauge (33), operates all working parts of the burner. The oil is taken into the burner through the oil pump (42) and forced under pressure through the oil supply tube (11) and released through the gooseneck (8), where it comes in contact with the atomizing cup (9). The atomizing cup rotates at a speed of from 900 to 3,600 feet per minute, depending upon



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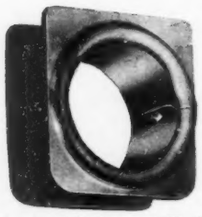

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the size of burner. The centrifugal force reduces the inflowing oil to a thin film on the inside of the cup. The oil leaves the cup at the speed mentioned above in a tangential direction. Here the oil is met by the impact of air from the blower (1). The air from the blower is forced through the air nozzle (6), through the guide vanes (7) and strikes the oil at an angle opposite to that of the oil stream. This angle can be varied to suit the requirements of the furnace.

The result of this combination is that the very finest of oil atomization takes place at the tip of the cup. This atomized oil ignites at once and the burning commences immediately at this point, thus the burner pipe (B19), the atomizer (B2) and the tip (B1). As the oil jet leaves the burner tip it forms a fine spray. Air is drawn in through the vane and doors of the furnace front and passes into the furnace after mingling thoroughly with the oil spray and thus forming a correct mixture for good combustion.

The atomizer (B2) is grooved in such a way that the oil spray, as it leaves the burner tip and mixes with the air, is given a whirling motion.

As stated before, the pressure used varies from 50 to 200 pounds. The most efficient results are obtained at the higher pressures. The temperature to which the oil is heated before entering the burner varies from 140 to 300 degrees Fahrenheit, pending upon the grade of oil used, the heavier the oil the higher the temperature.

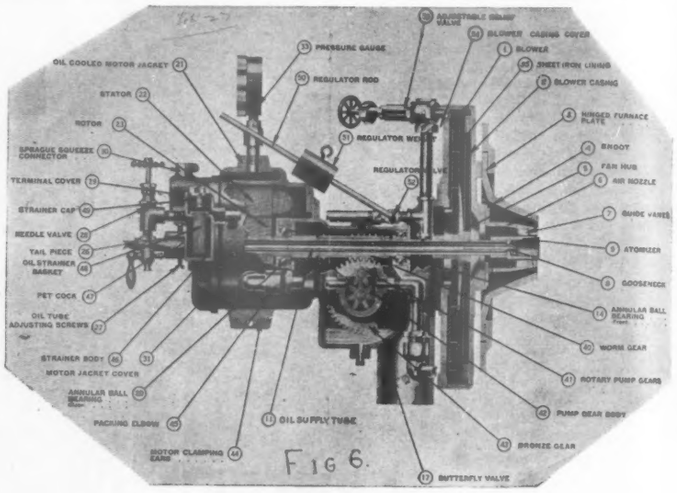

Fig. 6—Rotary Type Burner.

Referring to the complete equipment used in this type of burner, it is evident that this requires quite an elaborate installation. However, this is offset by the advantages of such a system, namely, less noise, no steam or aid required, which is a material saving, most efficient combustion, and lower grades of fuel oil can be used.

Choice of Burner

From the systems outlined above it will be seen that the original investment on a fuel oil burner can vary from a few dollars to hundreds of dollars. It is evident, therefore, that many items must be taken into consideration, such as the condition of heating and the amount of heat needed. Having in hand a given condition the matter of determining the most economical system for such condition resolves itself into figuring the original investment, cost of upkeep, and cost of operation, including the amount of fuel oil used.

In conclusion, it should be noted that maximum combustion efficiency depends on more than the particular burner used. The combustion chamber plays a most important part. This should be of proper dimensions and design. The stack or chimney should be made to conform to the particular conditions. The physical condition of furnace walls, ducts and stack should be such that no infiltration of cold air be present. Lastly, a great deal depends upon the operation of the burner itself; the right amount of air for the amount of fuel oil used, the correct amount of draft, and the careful attention of the operator.

making use of all intended heating surface. Automatic air, draft and oil control add further to the ultimate efficiency of this system. One of the great advantages of this system is that it operates efficiently on all grades of fuel oil, which is an item of great consequence, especially in the case where the lower grades of fuel oil are to be used.

Mechanical Type

We have discussed burners from the simple gravity type to the more complex turbine and rotary type, but in all of these either air or steam are used to at least aid in atomizing the oil. Here (Figure 7) we have the type that is based on mechanical atomization of the oil and requires neither steam nor air for atomization. The oil is first heated to the required temperature and then forced under

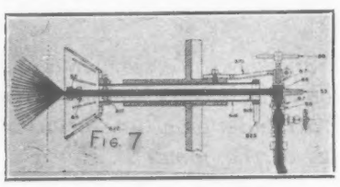

Fig. 7—High Pressure Burner.

comparatively high pressure (50 to 200 pounds) through a small orifice in the burner which breaks up the fuel into minute particles and sprays it into the furnace highly atomized.

The complete equipment consists of burner, furnace front, discharge strainer, oil heater, pump, suction strainer, pressure gauge, thermometer, relief valves, pump governor, air chamber and inspection tank.

The burner consists essentially of a tip of special design mounted on the end of the burner pipe which extends into the furnace through an adjusting pipe. On the end of the adjusting pipe is a cast-iron cone or deflector. The cone can be adjusted by moving it in or out to a position which gives the proper distribution of draft for good combustion.

In operation, the oil is pumped to the burner under the above-mentioned pressure, passing through the strainer (B6),

PROSPECTING PERMITS

During the month of February the Geological Survey reported on the structural relations of lands embraced in 330 applications for prospecting permits under the oil sections of the leasing law of February 25, 1920, bringing the number of such reports rendered since the enactment of the law to 32,879. More than 200 such applications were pending in the survey February 28, 1926.

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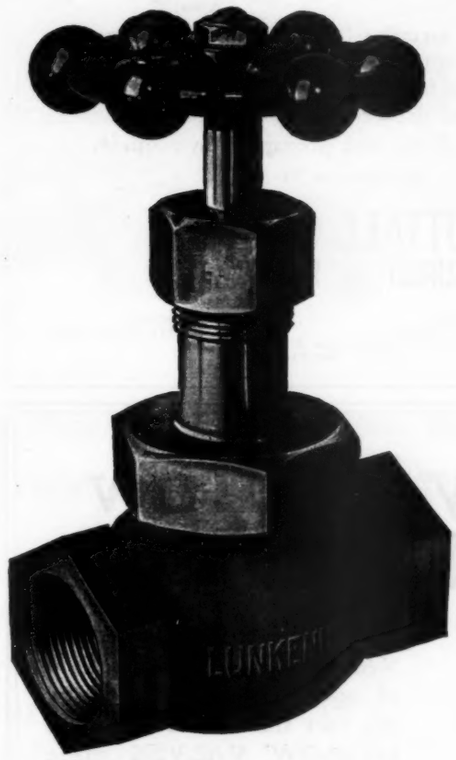

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Working steam pressures up to 300 pounds.

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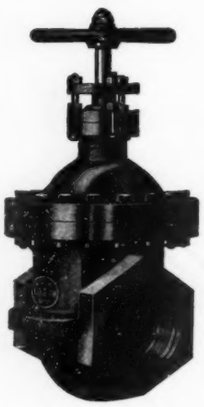

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What the Geologist Has Done to Open Producing Fields

By Dorsey Hager

No better measure of geological success or efficiency can be given than by taking the list of producing oil fields and classifying the fields as to discovery.

When marked "Geology" the field was opened under geological advice. If blank the field was opened without geological advice or in one or two places is open to question. The classification of independent or Standard Oil shows the relative activities of independents. The Standard Oil units may have opened several new oil fields in Texas, Louisiana, Arkansas, Oklahoma or Kansas but from my sources of information I have been unable to find direct evidence for such strikes, but I welcome corrections.

The list below is a fair average of American oil fields and the results give a fair index as to the part played by geologists and by the independent oil companies in opening new oil fields. Under the heading of "others" in the list it is fair to assume that the percentages of fields opened by geologists and also by independents would be practically the same.

Oklahoma-Kansas

Oklahoma—	Geology	Company
North Braman	Geology	Independent
South Braman	Geology	Independent
Blackwell	Geology	Independent
Hubbard	.....	.....
Thomas	Geology	Independent
Tonkawa	Geology	Independent
Garber	Geology	Independent
Burbank	Geology	Independent
Osage (outside Burbank)	.....	.....
Watchorn	Geology	Independent
Cushing	.....	.....
Yale-Jennings	Geology	Independent
Davenport	.....	Independent
Bristow-Slick	.....	Independent
North Okmulgee	.....	Independent
Lyons-Deaner	.....	Independent
Stroud	.....	Independent
Cromwell	.....	Independent
Papoose	.....	Independent
Wewoka	Geology	Independent
Duncan district	Geology	Independent
Graham	Geology	Independent
Fox	Geology	Independent
Healdton	.....	.....
Hewitt	Geology	Independent
Kansas—	Geology	Company
Florence-Covert	Geogy	Independent
Peabody-Elbing	Geology	Independent
El Dorado-Towanda	Geology	Independent
Augusta-Fox Bush	Geology	Independent
Rainbow Bend	Geology	Independent
Russell	Geology	Independent

Texas (Outside Gulf Coast)

North Texas—	Geology	Company
Burkburnett	.....	Independent
Electra	.....	Independent
Iowa Park and K-M-A	.....	Independent
Wilbarger	.....	Independent
Panhandle	Geology	Independent
Petrolia	.....	Independent
Archer County	.....	Independent
East Central Texas—		
Mexia	Geology	Independent
Currie	Geology	Independent
Richland	Geology	Independent
Corsicana-Powell	Geology	Independent
Wortham	Geology	Independent
West Central Texas—		
Stephens County	Geology	Independent
Eastland County	Geology	Independent
Desdemona	Geology	Independent
Young County	Geology	Independent
Palo Pinto County	.....	Independent
Callahan County	.....	Independent
Shackelford County	.....	Independent
Reagan County	.....	Independent
Southwest Texas—		
Luling	Geology	Independent
Mirando	.....	Independent
Somerset	.....	Independent
Lytton Springs	.....	Independent
Piedras Pintas	Geology	Independent

North Louisiana-Arkansas

North Louisiana—	Geology	Company
Homer	Geology	Independent
Haynesville	Geology	Independent
Caddo, light	.....	Independent
Caddo, heavy	.....	.....
De Soto-Red River	.....	Independent
Elm Grove	Geology	Independent
Bellevue	Geology	Independent
Cotton Valley	Geology	Independent
Arkansas—		
El Dorado	Geology	Independent
Smackover, light	.....	Independent
Smackover, heavy	.....	Independent
Stephens	.....	Independent
Nevada	.....	Independent

Gulf Coast

	Geology	Company
Goose Creek	Geology	Independent
Hull	Geology	Independent
Saratoga	Geology	Independent
Blue Ridge	Geology	Independent
Damon Mound	Geology	Independent
Batson	Geology	Independent
West Columbia	Geology	Independent
Humble	Geology	Independent
Pierce Junction	Geology	Independent
Sour Lake	Geology	Independent
Spindletop	Geology	Independent
Orange County	Geology	Independent
Edgerly	Geology	Independent
Evangeline	Geology	Independent
Vinton	Geology	Independent

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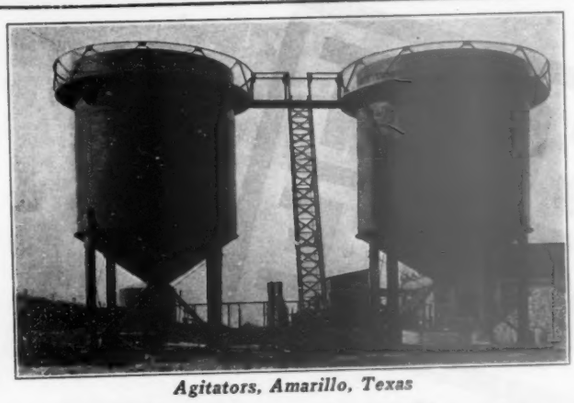

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Lockport	Geology	Independent
South Liberty	Geology	Independent
Big Creek	Geology	Independent
Boling	Geology	Independent

Rocky Mountain

Wyoming—	Geology	Company
Salt Creek	Geology	Independent
Grass Creek	Geology	Standard Oil
Elk Basin	Geology	Independent
Big Muddy	Geology	Independent
Lost Soldier	Geology	Independent
Rock River	Geology	Standard Oil
Teapot Dome	Geology	Independent
Montana—		
Cat Creek	Geology	Independent
Sunburst	Geology	Independent
Colorado—		
Moffat (Craig)	Geology	Independent
Fort Collins	Geology	Independent
Florence	Geology	Independent
New Mexico—		
Artesia	Geology	Independent
Hogback	Geology	Standard Oil
Rattlesnake	Geology	Independent

California

	Geology	Company
Santa Fe Springs	Geology	Independent
Long Beach	Geology	Independent
Huntington Beach	Geology	Standard Oil
Torrance	Geology	Independent
Dominguez	Geology	Independent
Rosecrans	Geology	Independent
Inglewood	Geology	Standard Oil
Midway Sunset	Geology	Independent
	Opened By	Opened By

SUMMARY

District—	No. Fields	Geology No.	Geology %	Independents No.	Independents %
Oklahoma-					
Kansas	31	21	67.7	31	100
Texas (outside Gulf Coast)	25	11	44.0	25	100
Texas (Gulf)	19	19	100.0	19	100
North La. & Arkansas	11	6	60.0	11	100
Rocky Mtn.	15	15	100.0	12	80
California	8	8	100.0	6	75
Total	109	80	73.4	104	95.4

Comment

Of the 109 oil fields listed above geologists are responsible for 80, or 73.4 per cent, of the fields discovered. Independent oil companies mean here all companies or individuals not belonging to the Standard Oil group at time the fields were opened. Midwest, for example, was independent until purchased by Standard Oil Co. of Indiana and Humble was independent until purchased by Standard Oil Co. of New Jersey.

TINSLEY BOTTOM POOL

The Tinsley's Bottom oil field in Clay and Jackson Counties, Tennessee is less than 2 years old, but has produced until the end of January of this year almost 11,000 bbls of high grade oil from several wells.

The field was examined recently by Dr. Joseph K. Roberts, geologist of the State Geological Survey. The results of the investigation are presented briefly in a short report issued by the State Geological Survey at Nashville March 15. The report is accompanied by a map showing the geologic structure of the oil field, the location of the roads, the wells and the farm lines.

Copies of the report may be purchased for 25 cents each from the State Geologist at Nashville.

AERIAL SURVEY OF COLOMBIA

NEW YORK, Apr. 3.—The International Aerial Engineering Co. has been awarded a contract by the South American Gulf Oil Corp., subsidiary of Gulf Oil Corp., for the aerial photographic mapping of approximately 650 square miles of previously unmapped petroleum lands in the Magdalena Valley, Department of Santander, Colombia.

UPHOLDS INSPECTION LAW

The Indiana oil inspection law has been held constitutional in a decision handed down by the United States Supreme Court. The decision was made in the appealed suit of the Evansville Oil & Grease Co., which had sought an injunction against the enforcement of the law.

JOBBING COMPANY CHARTERED

The Tulsa Independent Oil Co. has been incorporated in Oklahoma to engage in the jobbing business. The company at present operates bulk stations in Tulsa and Bristow, Okla. O. L. Cordell, former vice president of the Waite Phillips Co., E. M. Cordell and R. C. Jopling, all of Tulsa are the incorporators of the company.

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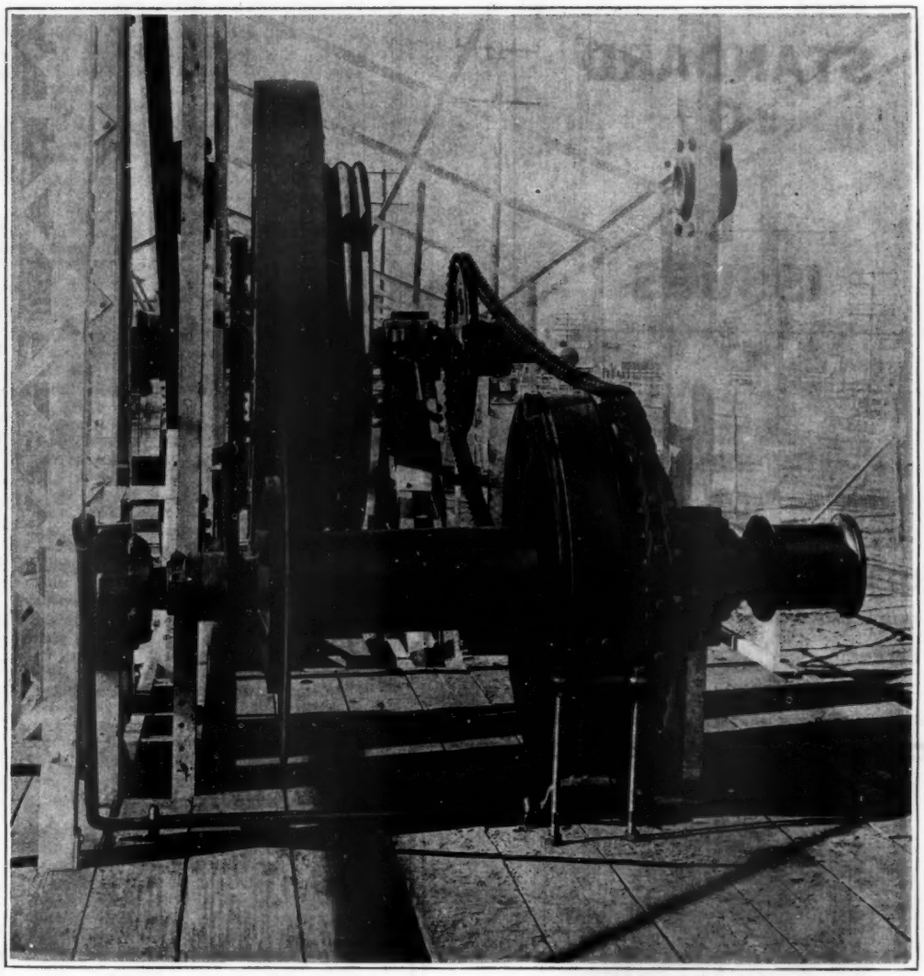

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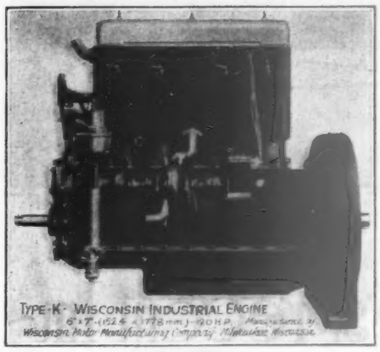

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Chicago, Cincinnati, Des Moines, Indianapolis

TWIN DISC CLUTCH COMPANY
RACINE WISCONSIN

Inquiry On Mergers In Regular Course Government Reports

By Charles E. Kern
Washington Bureau
The Oil and Gas Journal

WASHINGTON, D. C., Apr. 3.—Following its practice for many years the Department of Justice has under investigation the merger of the Tide Water Oil Co. and the Associated Oil Co. and also of the Standard Oil Co. of New York, and the General Petroleum Co. In a statement given out by the Department it is said that these investigations have been undertaken in the regular course and in pursuance of the practice of inquiring into every reported combination or merger of such size as to indicate a possible violation of law.

As any such large merger in the oil industry would be sure to bring about comment in Congress, this action by the Department of Justice is regarded as not being without some compensation for the oil industry at large. It is believed that as this action was carefully guided by the best legal talent of the country, and as it has been perfectly open and above board, there is little likelihood that the Department of Justice will find anything that can be justly criticised. It is in line with economy of management and it is very doubtful whether in any respect it violated either the Clayton Act or the Sherman Anti-Trust Law. However, the Department's investigation has not been completed and it will take some time before a definite statement can be given out. As is well known, the Department is very sensitive about saying anything to indicate that a transaction of this kind is satisfactory. The only statement that might be forthcoming is one in effect that up to the time of making this statement the Department has not decided adversely.

As is very well known the Department of Justice has, as one of its regular prescribed self-imposed duties, endeavored to keep informed in respect to all business transactions that might violate law.

TAX APPEAL HEARINGS

Chairman Korner of the United States Board of Tax Appeals announces that commencing April 19, four divisions of the board will hold hearings in various parts of the country if necessary arrangements can be made and suitable court rooms obtained. The cities of Atlanta, Birmingham, New Orleans, Dallas, Tulsa, Oklahoma City, Chicago, St. Paul, Des Moines, San Francisco, Los Angeles, Portland and Seattle have been tentatively selected as the places of holding hearings during the period from April 19 to May 15, inclusive. The calendar of cases to be heard is in course of preparation. Preference for hearing will be given those cases in which the hearing fee of $10, prescribed under the Revenue Act of 1926, has been paid.

RULING ON LEASE VALUE

WASHINGTON, D. C., Apr. 3.—The Board of Tax Appeals has rendered a decision in a coal land case that has equal application to oil leases. It is the case of Plymouth Mining Co. of Pennsylvania. The board holds that the evidence presented was sufficient to support the taxpayer's claim that a lease hold of coal lands paid for in stock had a value equal to the par value of the stock issued for it, both for the purpose of invested capital and deduction for exhaustion. The board holds: "The value of a leasehold of coal lands is at all times a question of fact, which must be determined in the light of the evidence produced."

WELL KNOWN SHOOTER DIES

Harry E. Meyers died at Shelby, Mont., March 13 at his home there. Mr. Meyers was a shooter for the Midwestern Torpedo Co. and made Shelby his headquarters. The remains were taken to his former home in Toledo, Ohio. He is survived by his wife.

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to encourage research in petroleum, and oil companies are spending millions of dollars working out improved methods of production and refining.

Changed days since the time when geologists were tolerated as "rockhounds" and chemists were thought to belong exclusively in drug stores.

Nowadays the industry is employing and profiting from the services of thousands of geologists, chemists and technologists of all kinds and has become probably the most scientific industry engaged in supplying the world with a universally used product.

The Oil and Gas Journal, as the premier publication of the oil industry, has kept pace with that development. The very latest discoveries by petroleum geologists are reported and illustrated in "The Big Yellow Book," and the progress in chemistry of petroleum refining is quickly recorded in every issue.

The need for a popular interpretation of the significance of this great and revolutionizing movement in the oil industry has led to the engagement of Dr. Charles K. Francis as Technical Editor of The Oil and Gas Journal. Doctor Francis will answer technical questions from readers and contribute articles on technological problems as they arise.

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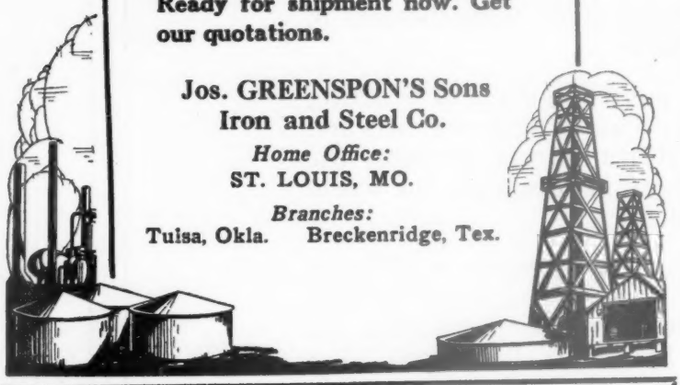

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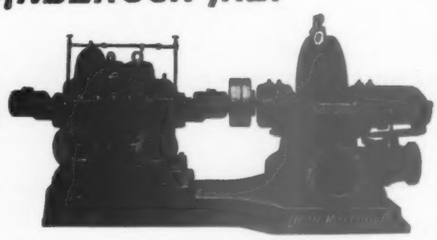

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Mexican Shipments Slightly Increase In February Report

By George Blardone
Mexican Bureau, The Oil and Gas Journal

TAMPICO, Mex., Apr. 2.—Shipments of petroleum from Mexican ports of primary clearance during the month of February totaled 6,876,098 bbls., a slight increase over the January movement, but a decrease of say 3,107,939 bbls. from the movement in February, 1925.

There were no unusual features in the movement. The northern fields oil (the heavier crudes of Mexico) totaled some 6,343,902 bbls., a reflection of the importance of this movement at this time in contradistinction to the movement of the lighter gravity oils of the south fields.

The movement in detail follows:

FROM TAMPICO
(By Huasteca Petroleum Co.)

Feb.	Rig	Vessel and destination—	Barrels
1	Ss.	S. M. Spalding, New Orleans	66,853
1	Ss.	Inveruria, Lizard f/o	*57,809
2	Ss.	Cerro Ebano, New York	*76,941
3	Ss.	R. W. Stewart, Providence	*76,945
6	Ss.	Nora, Providence	*79,452
7	Ss.	I. C. White, Boston	*68,139
8	Ss.	H. G. Wylie, Tampa	*41,120
8	Ss.	P. H. Harwood, Galveston	*68,579
9	Ss.	Norman Bridge, Jacksonville	*41,299
10	Ss.	Montana, New York	63,405
10	Ss.	Meline, New Orleans	64,503
11	Ss.	C. A. Canfield, New York	*60,521
11	Ss.	C. E. Harwood, New York	†35,097
12	Ss.	F. R. Kellogg, Boston	*63,062
14	Ss.	F. H. Wickett, New York	*78,250
14	Ss.	E. L. Doheny, Boston	*61,086
15	Ss.	P. H. Harwood, Galveston	*69,451
17	Ss.	Wm. Green, Baltimore	66,622
18	Ss.	Carrabulle, New York	*43,047
17	Ss.	J. O. Boyd, Miami	†19,576
16	Ss.	J. M. Denziger, Rio Janeiro	†7,191
17	Ss.	J. M. Danziger, Rio Janeiro	*60,006
19	Ss.	Mirlo, New Orleans	66,252
19	Ss.	W. H. Doheny, Boston	*64,883
21	Ss.	Kennebec, Lizard f/o	*50,223
21	Ss.	Meline, Providence	*61,478
22	Ss.	Dean Emery, Philadelphia	67,813
22	Ss.	Cerro Azul, Providence	*77,160
23	Ss.	W. L. Steed, St. Rose	†72,647
23	Ss.	P. H. Harwood, New York	*64,467
24	Ss.	E. L. Doheny, Puerto Cortez, C. A.	*60,857
24	Ss.	Ball Butte, Mobile	*64,222
25	Ss.	G. G. Henry, Boston	*65,435
26	Ss.	R. W. Stewart, Providence	*78,164
28	Ss.	Norman Bridge, Port Tarafa, Cuba	*40,560
28	Ss.	Invergoil, Lizard f/o	*57,422
		Coastwise deliveries	*93,542
		Coastwise deliveries	†4,682
		Visible bunker deliveries	17,620
		Total	2,276,380

(By Transcontinental Petroleum Co.)

Feb.	Rig	Vessel and destination—	Barrels
1	Ss.	Agwimex, New York	78,412
1	Ss.	Calgarolite, Baltimore	77,969
2	Ss.	Glenpool, Santiago and Cienfuegos	51,336
6	Ss.	Malabar, Charleston	74,480
5	Ss.	L. J. Drake, Jacksonville	*53,518
7	Ss.	Trontolite, Baton Rouge	64,154
7	Ss.	Trontolite, Baton Rouge	†576
9	Ss.	Princeton, Sagua and Havana	*49,339
9	Ss.	T. H. Wheeler, New York	33,504
9	Ss.	T. H. Wheeler, New York	†36,689
9	Ss.	Agwilake, New York	82,636
11	Ss.	Mary Luckenbach, Boqueron and Cienfuegos	51,114
12	Ss.	Imlay, Baltimore	65,945
12	Ss.	Muskogee, San Juan and Guanica	*51,597
14	Ss.	Beta, New York	89,466
15	Ss.	Agwihavre, New York	80,723
17	Ss.	Trontolite, Jacksonville	*52,728
19	Ss.	Ardmore, New York	77,640
20	Ss.	Matinicock, Baltimore	75,458
22	Ss.	Victolite, Baltimore	95,891
22	Ss.	Agwimex, New York	78,732
23	Ss.	Malacca, Charleston	71,837
23	Ss.	Ontariolite, Baltimore	83,036
24	Ss.	Dilwyn, Charleston	68,291
24	Ss.	Hugoton, San Juan and Ponce	*66,805
26	Ss.	Princeton, Boqueron and Havana	49,266
28	Ss.	Calgarolite, Baltimore	80,491
28	Ss.	L. J. Drake, Jacksonville	53,020
		Bunker deliveries	74,981
		Total	1,839,624

(By Mexican Sinclair Petroleum Corp.)

Feb.	Rig	Vessel and destination—	Barrels
2	Ss.	Harry Farnum, Port Limon, C. A.	31,716
7	Ss.	Madrono, Nuevitas and Tarafa	55,761
8	Ss.	E. V. R. Thayer, New Orleans	70,386
10	Ss.	Marita, Cienfuegos and Belic	54,424
10	Ss.	Gene Crawley, New Orleans	32,399
17	Ss.	W. L. Connelly, New Orleans	30,603
18	Ss.	E. V. R. Thayer, New Orleans	70,767
19	Ss.	Harry Farnum, New Orleans	30,836
20	Ss.	A. E. Watts, Matanzas and Neuvitas	66,726
22	Ss.	Madrono, New Orleans	56,026
25	Ss.	Mirita, Neuvitas	54,991
28	Ss.	W. L. Connelly, New Orleans	31,415
28	Ss.	E. V. R. Thayer, Matanzas	70,342
		Bunker deliveries	17,635
		Total	674,026

(By Mexican Gulf Oil Co.)

Feb.	Rig	Vessel and destination—	Barrels
2	Ss.	Georgia, Galveston	48,727

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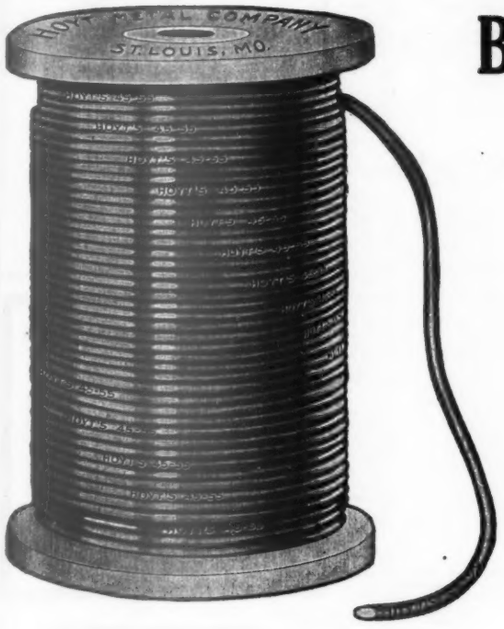

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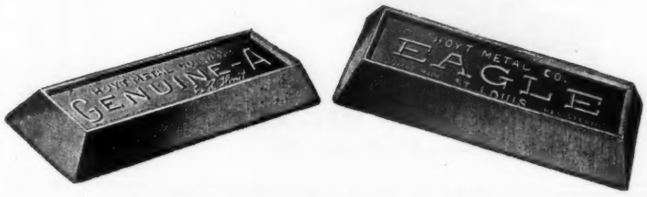

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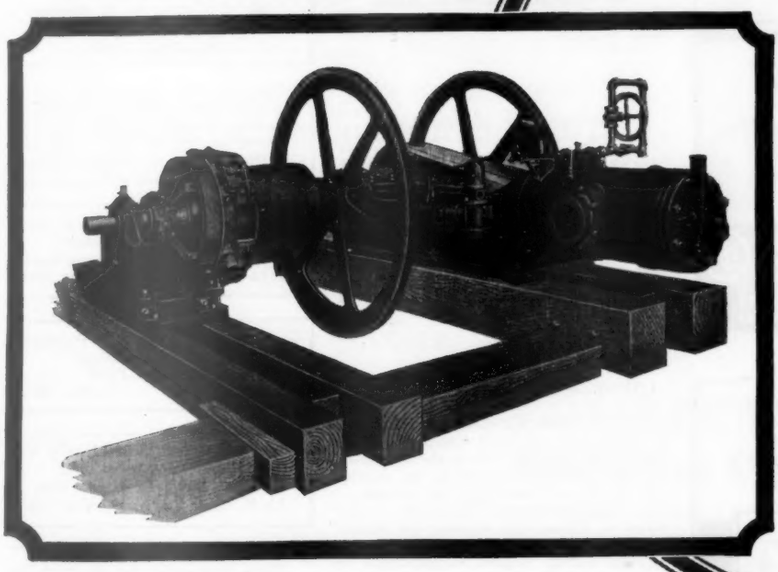

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14	Brg	Conneaut, Savannah	15,600
18	Ss.	Agwimar, United States	48,717
20	Ss.	Currier, Tampa	42,708
23	Ss.	Gulfpoint, Galveston	48,701
24	Ss.	Cape Ann, Philadelphia	50,644
26	Ss.	Gulfoil, New Orleans	48,470
26	Brg	Shenango, New Orleans	22,557
		Bunker deliveries	19,631
		Total	576,575

(By Mexican Eagle Oil Co., Ltd.)

Feb.	Rig	Vessel and destination—	Barrels
3	Ss.	Jelling, Belize and S. Salvador	†2,632
3	Ss.	San Leon, Nassau f/o	*24,798
3	Ss.	San Leopoldo, Nassau f/o	*24,783
3	Ss.	San Leopoldo, Nassau, f/o	†25,142
11	Ss.	San Silvestre, Rio Janeiro	*39,733
11	Ss.	San Silvestre, Rio Janeiro	†21,460
16	Ss.	Hagood, Philadelphia	*68,702
19	Ss.	War Diwan, Havanna	*53,793
22	Ss.	San Leonardo, Mariel, Cuba	*52,268
22	Ss.	San Lamberto, Key West	*57,328
25	Ss.	San Salvador, Buenos Aires	†65,152
		Coastwise deliveries	*52,973
		Coastwise deliveries	†9,957
		Bunker deliveries	55,915
		Total	554,636

(By La Esperia Oil Co.)

Feb.	Rig	Vessel and destination—	Barrels
3	Ss.	F-Sulphur 1, Freeport	18,571
4	Ss.	F-Sulphur 6, Freeport	25,340
8	Ss.	F-Sulphur 1, Freeport	19,038
9	Ss.	F-Sulphur 6, Freeport	24,594
13	Ss.	F-Sulphur 1, Freeport	17,587
15	Ss.	F-Sulphur 6, Freeport	25,074
21	Ss.	F-Sulphur 1, Freeport	18,306
26	Ss.	F-Sulphur 1, Freeport	18,128
28	Ss.	F-Sulphur 6, Texas City	40,672
		Bunker deliveries	881
		Total	207,191

(By Cia. Mexicana Holandesa La Corona, S. A.—Royal Dutch Shell)

Feb.	Rig	Vessel and destination—	Barrels
9	Ss.	Scott, American, Bahamas f/o	58,433
10	Ss.	Occidental, Port Arthur	64,118
24	Ss.	Trimountain, Bahamas f/o	52,173
		Bunker deliveries	19,440
		Total	194,164

(By Empire Gas & Oil Co.)

Feb.	Rig	Vessel and destination—	Barrels
24	Ss.	Torres, Bayonne	49,698
27	Ss.	Mary Luckenbach, Baytown	51,681
		Total	101,379

(By Mexican Atlas Petroleum Corp.)

Feb.	Rig	Vessel and destination—	Barrels
9	Ss.	Nelson, New York	37,557
12	Ss.	Cassimir, New York	43,860
		Bunker deliveries	5,856
		Total	87,273

(By New England Fuel Oil Co.)

Feb.	Rig	Vessel and destination—	Barrels
5	Ss.	Satanta, Providence	43,117
28	Ss.	Satanta, Providence	42,661
		Total	85,778

(By The Texas Company)

Feb.	Rig	Vessel and destination—	Barrels
19	Ss.	Louisiana, Cienfuegos	24,876
23	Ss.	Georgia, Providence	*47,237
		Bunker deliveries	4,919
		Total	77,032

(By Pierce Oil Corp.)

February	Coastwise deliveries	71,584

(By East Coast Oil Co.)

Feb.	Rig	Vessel and destination—	Barrels
14	Ss.	Torres, Galveston	50,154
		Bunker deliveries	8,649
		Total	58,803

(By Panuco Boston Oil Co.)

Feb.	Rig	Vessel and destination—	Barrels
23	Ss.	Cape Ann, Philadelphia	13,733

FROM TUXPAM
(By Mexican Eagle Oil Co., Ltd.)

February	Coastwise deliveries	57,920

FEBRUARY SUMMARY

From Tampico	6,818,178
Tuxpam	57,920
Total February, 1926	6,876,098
Total February, 1925	9,984,037
Decrease February, 1926	3,107,939

DIVISION OF MOVEMENT

To United States	5,045,587
Cuba and West Indies	860,125
Mexican coastwise	290,658
South America	193,542
United Kingdom	165,454
Central America	95,205
Bunkers (to balance)	225,527
Total	6,876,098

CLASSES

Crudes	3,886,996
Topped crudes	2,462,825
Distillates	300,750
Bunkers, (to balance)	225,527
Total	6,876,098

*Denotes topped crudes; †denotes distillates.

COUNTER CLAIM FOR TANKERS

WASHINGTON, D. C., Apr. 3.—The United States Court of Claims has rendered a decision by which the Standard Transportation Co., owned by the Standard Oil Co. of New York, is ordered to pay the government $2,338,481. The Court of Claims had allowed the Standard company $2,950,536 as compensation for the use of tankers requisitioned in 1917, but the government brought in a counter claim amounting to $5,289,017, based on the rate of compensation allowed for other tankers.

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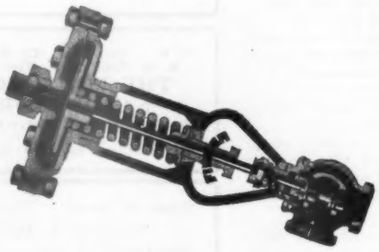

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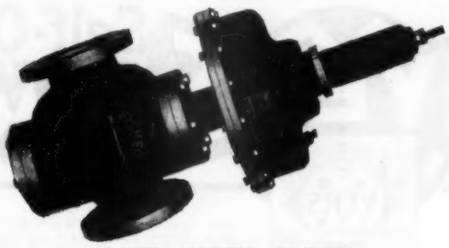

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Alcohol and Gasoline Motor Fuel Subject Of Wide Research

One of the interesting research enterprises conducted by the alcohol industry in cooperation with government bureaus, respects alcohol-gasoline motor fuels. Outlining the research development of the United States Industrial Alcohol Co. for The Oil and Gas Journal, Dr. D. B. Keyes, director of research, says in this connection:

"Considerable work has been done on alcohol-gasoline motor fuels. In order to blend the regular 95 per cent ethyl alcohol with gasoline it was necessary to add a blending agent, such as benzol or ether. A great many combinations were tried out, and extensive tests performed. The new development in producing anhydrous alcohol would blend with gasoline without the addition of such agents. A mixed fuel containing from 20 to 30 per cent of absolute alcohol of anhydrous ethyl alcohol, the rest being gasoline, was developed and tried out extensively, with complete success, in various parts of the county. These tests were conducted on automobiles, airplanes and airships."

Dr. M. C. Whitaker, president of the U. S. Industrial Alcohol Co., recently pointed out the technical work on alcohol as a motor fuel somewhat fully, as follows:

"The use of surplus alcohol in motor fuels was given intensive study especially when war capacities indicated a large over supply. Official commissions particularly in France and England and private investigators in the United States applied themselves to this problem.

"Statistics of the maximum production of alcohol under present conditions as against the total consumption of motor fuels in all of these countries established the uniform conclusion that alcohol could not hope to replace gasoline but at most could only be used to supplement the gasoline supply by being blended therewith, and that the amount of alcohol available, or in sight, was a very small fraction of the total amount of motor fuel used.

"The investigation in the United States anticipated the official commission in Europe by two years in reaching the conclusion that motor alcohol, to be feasible at all, must be put out in some form readily blendable with gasoline. It was well known that ordinary 95 per cent alcohol was not miscible with gasoline without the use of expensive homogonizers but that anhydrous alcohol (99 to 100 per cent) would mix with gasoline in all proportions.

"The problem of producing large quantities of anhydrous alcohol must, therefore, from any sound economic standpoint, be solved as a preliminary to the production of alcohol-gasoline blends. Having clearly established the necessity of making anhydrous alcohol in commercial quantities, the research program was launched and finally resulted in a continuous process of distillation yielding anhydrous alcohol in large volume and at a minimum cost.

"Interesting confirmation of our analysis of the fuel alcohol problem and our conclusion was forthcoming in due course from both the British and French official commissions created to study this subject, when they announced, in effect, that the most feasible method of utilizing alcohol in motor fuels was in the form of a simple blend of anhydrous alcohol with gasoline, or other available hydrocarbons. In the meantime, Americans were doing that very thing and extensive tests were long since carried out in the actual use of such fuels in motor cars, motor boats, airplanes, block tests, etc. The merits and faults of alcohol-gasoline blends were established and the position of such fuels fixed in the scheme of things.

"The composite fuels made simply by blending anhydrous alcohol with gasoline have been given most comprehensive service tests extending over a period of eight years. Hundreds of thousands of miles

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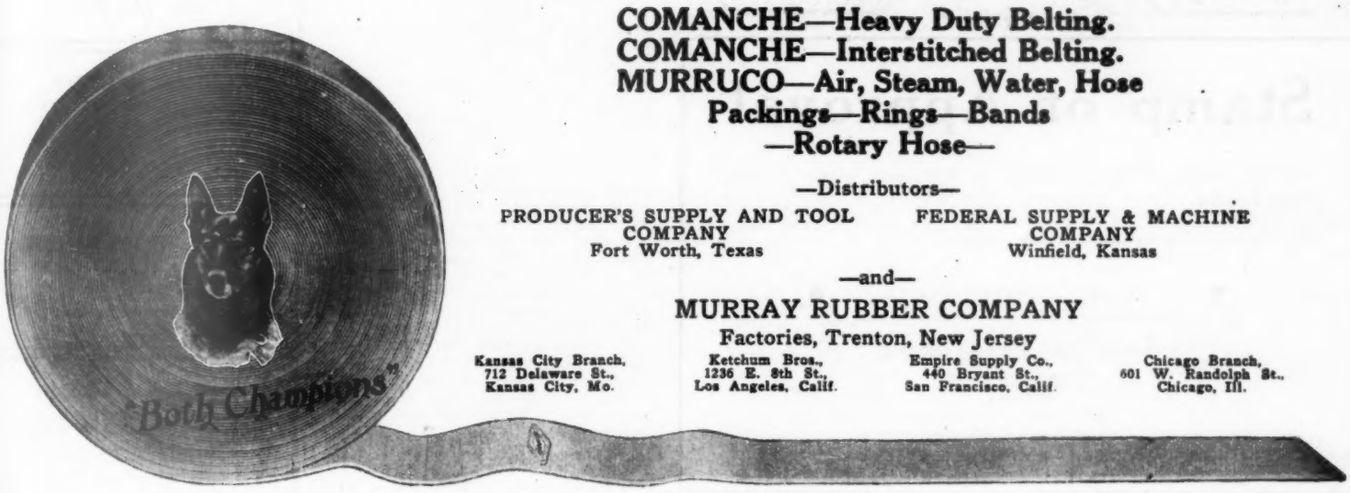

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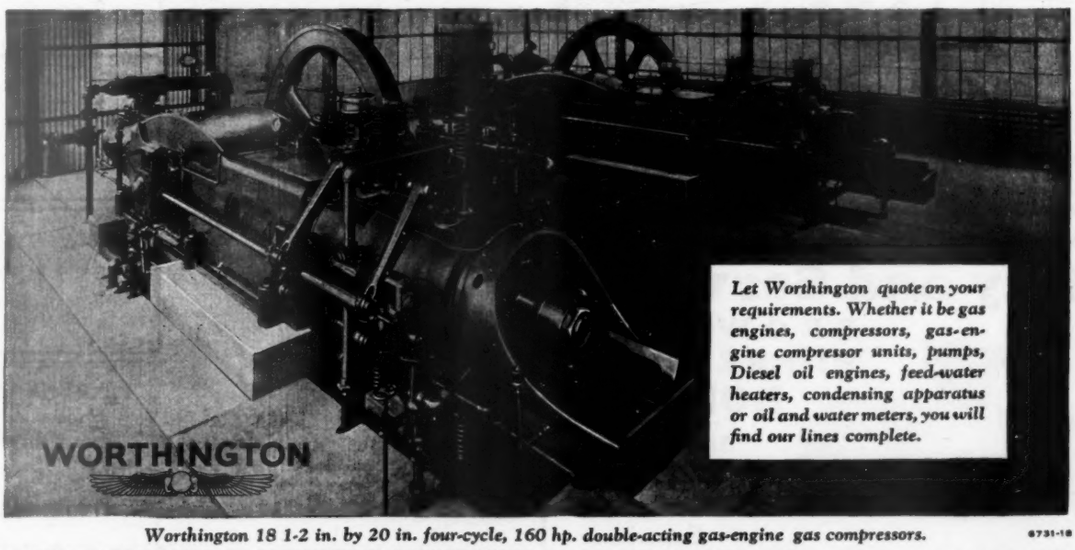
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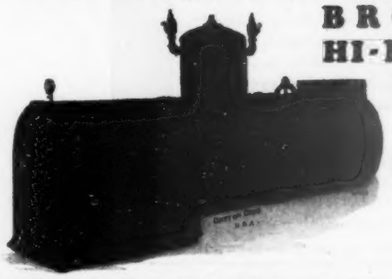

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9 DRILLING WELLS IN COLO. BELOW 4,400 FT.

DENVER, Colo., Apr. 2.—Of the 42 drilling wells in Colorado, 9 are below 4,400 feet. The deepest of the active drilling wells at this time is the Union Oil Co. of California's No. 1 F. Hess, southwest quarter of Section 32-10-68, Larimer County, which is drilling below 4,954 feet. The same company's No. 1 Evans, Section 24-8-69, Larimer County, is below 4,954 feet. The California Co.'s No. 1 Scholtze-Union Pacific, Section 19-6s-48w, Cheyenne County, was last reported at 4,575 feet. The A. A. Rollestone Co.'s No. 1 Ullom, Section 9-12s-62w, El Paso County, is drilling below 4,605 feet. This company drilled a 7,300-foot test in the southwest quarter of Section 34-2n-69w, in Cheyenne County, which was abandoned some time ago as dry, and the casing is being pulled.

The Marland Oil Co. has abandoned No. 1 Ingram, NW cor. SW SW, Section 23-7s-103w, Garfield County, total depth 4,011 feet. The Associated Oil Co.'s No. 1 Webster, Section 4-6-68, Larimer County, is drilling below 4,610 feet. The Atlantic Petroleum Corp.'s No. 1 State, Section 36-8-69, Larimer County, was cleaning out at 4,350 feet. The Union Oil Co. of California's No. 3 Buckeye, Section 31-10-68, Larimer County, is drilling at 4,450 feet. The same company's No. 1 Whitaker-Blunck, Section 30-8-68, Larimer County, had an initial production of 375 bbls. from sand at 4,504 feet. The Wyoming Illinois Oil Co.'s No. 1 LeRoy, Section 30-10-68, set 6⅝-inch casing at 4,698 feet and found Muddy Dakota sand at 4,699-4,795 feet, and was cleaning out at 4,906 feet. The Texas Company's No. 1 Bank, Section 19-6-86, Routt County, was abandoned at 4,528 feet.

ANOTHER $100,000 FOR SUIT

WASHINGTON, D. C., Apr. 3.—A supplemental estimate for $100,000 for the fiscal year ending June 30, 1927, has been sent to Congress by the president for the prosecution of suits to cancel leases of oil lands involved in actions pending against Doheny and Sinclair. A similar amount was previously appropriated.

Statement of the Ownership, Management, Etc., of

THE OIL AND GAS JOURNAL
April 1, 1926

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Stockholders holding 1 per cent or more of total amount of stock: The Patrick C. Boyle Estate, Oil City, Pa.

Known bondholders, mortgagees and other security holders, holding 1 per cent or more of the total amount of bonds, mortgages or other securities: None.

W. T. BRYAN,
Secretary.

Sworn to and subscribed before me this 1st day of April, 1926.

MARIE H. TURNER,
Notary Public.

My commission expires October 11, 1926.

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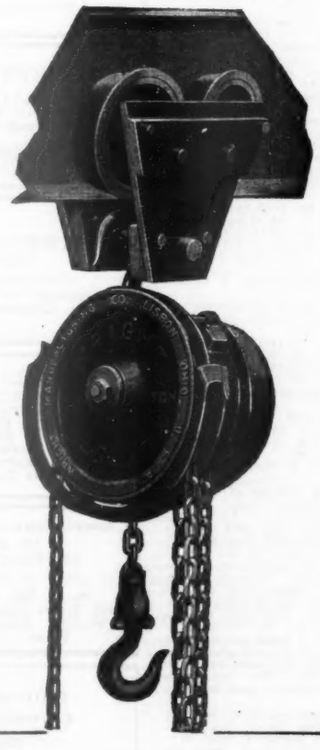

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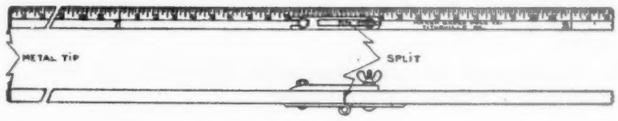

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ELECTION OF OFFICERS FOR SAFETY COUNCIL

At the session of the Petroleum Safety Council held at Houston, Tex., the following officers were elected: President, H. W. Boggess, Kansas City, safety director for the Sinclair companies; vice president, W. B. Pyron, Houston, third vice president of the Gulf allied companies; treasurer, H. H. Smith, Tulsa, secretary of the Mid-Continent Oil and Gas Association. Ray E. Miller, of Tulsa, was reelected managing director of the council.

The following state directors were chosen: For Kansas, J. S. Gibson, of Independence; for Oklahoma, Clay Briggs, Bartlesville; for North Texas, C. A. McDaniel, Dallas; for Gulf Coast section of Texas, E. B. Wood, Houston; for Louisiana and Arkansas, M. A. Tracy, Shreveport.

OIL IN NEW GUINEA

In his report to the Mandated Development Co., E. A. Griggs, geologist, states: "All three bores in New Guinea have proved the existence of oil-bearing strata and all the evidence points to the occurence of larger quantities of oil at greater depths than those hitherto reached. The company is engaged in prospecting for oil in ex-German New Guinea.

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Pages 132-133-134

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Notice is hereby given that the following described tracts in the Caddo oil field, Louisiana, are offered for oil and gas lease under Sec. 17 of the act of February 25, 1920 (41 Stat., 437), at the standard royalty fixed for departmental leases varying from 12½ to 33 1/3% of the oil produced, depending upon daily production per well, subject to reduction at discretion of lessor when average daily production of any well shall not exceed 10 barrels per day; and 12½ to 16 2/3% of casinghead gasoline and an annual rental of $1.00 per acre payable in advance which will be credited against royalties as they accrue for that year.

TRACT A: Lot 4, Sec. 5 (14.10 acres);
TRACT C: Lot 3, Sec. 5 (14.12 acres);
TRACT D: Lot 3, Sec. 4 (11.88 acres);
TRACT E: Lot 3, Sec. 3 and Lots 4 and 5, Sec. 4 (25.91 acres);
TRACT F: Lots 2 and 3, Sec. 3 (32.82 acres);
TRACT N: Frl. Sec. 20 (37.83 acres);
TRACT O: Lots 1 and 3, Sec. 32 (91.56 acres);
TRACT P: Lot 5, Sec. 32 (44.21 acres);
TRACT Q: Lot 1, Sec. 25 (8.90 acres);
TRACT R: Lot 1, Sec. 36 (9.12 acres);
TRACT S: Lot 2, Sec. 36 (4.69 acres).

All the above tracts are situated in T. 20 N., R. 16 W.

TRACT T: S½ NE¼ and W½ SE¼ Sec. 31 (160 acres) T. 20 N., R. 15 W.

TRACT U: SE¼ SE¼ Sec. 28 (39.98 acres), T. 22 N., R. 15 W.

TRACT V: SE¼ Sec. 9 (160.20 acres), T. 21 N., R. 16 W.

Said individual tracts will be offered at public auction at the Federal Court Room, Post Office Building, Shreveport, Louisiana, at 10 a. m. on April 21, 1926, and sold to the qualified bidder offering the highest bonus for lease of each tract at the stated royalty. One person, association or corporation may purchase not exceeding 640 acres. The successful bidder must deposit on day of sale a certified check upon a solvent bank, or cash, for one-fifth of the amount of each bid and file the showing of qualifications to receive a lease as required by Sec. 15 of Circular 672 oil and gas regulations, as to citizenship and ownership in other permits and leases. The remaining four-fifths of the bid must be paid prior to issuance of lease.

The bidders are warned against violation of the provisions of Sec. 59 of the U. S. Criminal Code approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders.

The right is reserved to reject any or all bids in the discretion of the Secretary of the Interior.

GEORGE J. REILEY, Register.

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Compounds—Joint Sealing—
Key Boiler Equipment Co.

Compressor Cylinders (See Cylinders—Compressor)—

Compressors—Air—
Bessemer Gas Engine Co.
Clark Brothers Co.
Cooper, C. & G. Co.
Gardner Governor Co.
Ingersoll-Rand Co.
Sullivan Machinery Co.

Compressors—Ammonia—
Carbondale Machine Co.
Cooper, C. & G., Co.

Compressors—Direct Connected Motor and Gas Engine Driven
Buffalo Gasolene Motor Co.
Clark Brothers Co.
Cooper, C. & G., Co.
Miller Improved Gas Engine Co.

Compressors—Direct Driven Air and Gas—
Bessemer Gas Engine Co.
Miller Improved Gas Engine Co.

Compressors—Gas—
Bessemer Gas Engine Co.
Chicago Pneumatic Tool Co.
Clark Brothers Co.
Cooper, C. & G., Co.
Hope Engineering & Supply Co.
Ingersoll-Rand Co.
National Transit Pump & Machine Co.
Worthington Pump & Machinery Corp.

Condenser Boxes—
Kaw Boiler Works Co.
Petroleum Iron Works Co.

Condensers—
Chicago Pneumatic Tool Co.
Ross Heater & Mfg. Co.
Southwestern Engineering Co., Inc.
Southwestern Engineering Corp.

Consulting and Contracting Engineers (See Engineers)—

Controllers—Liquid Level—
Fisher Governor Co., Inc.
Newton Process Mfg. Co.
Smith Separator Co.

Controllers—Pressure—
Smith Separator Co.

Controllers—Temperature —
Brown Instrument Co.
Foxboro Co., Inc.
Taylor Instrument Co.

Conveying & Elevator Machinery—
Brady Conveyors Corp.

Conveyors—Bucket and Belt—
Brady Conveyors Corp.

Conveyors—Pneumatic—
Brady Conveyors Corp.

Conveyors—Portable Belt—
Barber-Greene Co.

Cooling Towers—Atmospheric—
Braun, C. F. & Co.

Cordage—
Bridgeport Machine Co.
International Supply Co.
Plymouth Cordage Co.

Core Drilling—
Longyear, E. J., Co.
Mineral Exploration Co.
Spengler Core Drilling Co.

Core Drills—Diamond—
Longyear, E. J., Co.
Sullivan Machinery Co.

Coring Tools—
Reed Roller Bit Co.
Spengler Core Drilling Co.
Wilson Oil Tools Corp.

Corrugated Sheets, Black and Galvanized (See Sheets)—

Couplings—Flexible—
Nuttall, R. D., & Co.

Couplings—Plain End Pipe—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.

Couplings—Seamless Steel—
Harrisburg Pipe & Pipe Bending Co.
Smith, A. O., Corp.
Superior Tube Co.

Couplings—Steel for Casing, Line Pipe, Drill Pipe and Tubing—
Dayton Pipe Coupling Co.

Cracking Processes—
Graver Corp.
Kellogg, M. W., Co.
Universal Oil Products Co.

Crawler Treads—
Full Crawler Co.

Crown Blocks—
International Derrick & Equipment Co.
Lucey Mfg. Corp.
Lufkin Foundry & Machine Co.
Moore, Lee C., & Co., Inc.
Parkersburg Rig & Reel Co.
Slater Brothers Turnbuckle Derrick Co.

Cups—Composition—
Williamsport Development Co.

Cups—Leather—
Auer, C. A.

Cutters—Pipe—
Borden Co.
Nye Tool & Machine Works.
Trimont Mfg. Co.

Cylinders—Compressor—
Hope Engineering & Supply Co.

Cylinder Stocks—
Barnsdall Refining Co.
Pure Oil Co.
Texas Company, The

D

Dehydrating Process—
Barnickel, Wm. S., & Co.

Dephlegmators—
Newton Process Mfg. Co.

Depletion Reports—
American Appraisal Co.

Derricks—Steel—
Emsco Derrick & Equip. Co.
International Derrick & Equipment Co.
Marion Mch., Fdy. & Supply Co.
Moore, Lee C., & Co., Inc.
O'Brien Steel Construction Co.
Parkersburg Rig & Reel Co.
Slater Bros. Turnbuckle Derrick Co.
Superior Tube Co.

Derricks—Turnbuckle—
National Turnbuckle Derrick Co.
Slater Bros. Turnbuckle Derrick Co.

Diamond Core Drills (See Core Drills—Diamond—

Diamonds for Core Drilling (See Carbon—Black Diamond)—

Die Heads—Automatic Screw Cutting—
Landis Machine Co.

Die Heads—Bolt Threading—
Bignall & Keeler Machine Works.
Landis Machine Co.

Die Heads—Stationary Pipe Threading—
Bignall & Keeler Machine Works.
Cox & Sons Co., The
Landis Machine Co.
Standard Engineering Co.

Diesel Engines (See Engines)—

Dies—Pipe Threading—
Bignall & Keeler Machine Works.
Cox & Sons. Co., The
Landis Machine Co.
Nye Tool & Machine Works.
Standard Engineering Co.

Differential Pressure Recorders (See Recorders)—

Direct Driven Pumps (See Pumps)

Disc Bits (See Bits—Disc)—

Dissolved Acetylene (See Acetylene)—

Distillate—
Acme Petroleum Co.

Ditchers—Pipe Line—
Barber-Greene Co.
Buckeye Traction Ditcher Co.

Draw Works—
Lucey Mfg. Corp.
Lufkin Foundry & Machine Co.
National Supply Co.
Titusville Iron Works Co.

Drillers Hose (See Hose)—

Drilling and Fishing Tools—
Acme Fishing Tool Co.
Baash-Ross Tool Co.
Bovaird & Seyfang Mfg. Co.
Bovaird Supply Co.
Bridgeport Machine Co.
Brown Welding & Machine Co.
Burns Tool Co.
Continental Supply Co.
Emsco Derrick & Equip. Co.
Hinderliter Tool Co.
Hughes Tool Co.
International Supply Co.
Larkin & Co.
Leidecker Tool Co.
Lucey Mfg. Corp.
Murray Tool & Supply Co.
Oil Well Supply Co.
Reed Roller Bit Co.
Regan Forge & Engineering Co.
Spang & Co.
Star Drilling Machine Co.
U. S. Tool Co.

Drilling Engines (See Engines)—

Drilling Equipment—
Clark Brothers Co.
Hughes Tool Co.
O'Brien Steel Construction Co.
Oil Well Supply Co.
Parkersburg Rig & Reel Co.
Reed Roller Bit Co.
Star Drilling Machine Co.

Drilling Gate Valves (See Valves)

Drilling Machines—
Leidecker Tool Co.
Oil Well Supply Co.
Star Drilling Machine Co.

Drilling Tools (See Drilling and Fishing Tools)—

Drilling Valves (See Valves)—

Drills—Portable Air—
Chicago Pneumatic Tool Co.

Drive Shoes—
Bartlesville Supply Co.
Larkin & Co.

Drop-Forged Wrenches (See Wrenches)—

Drops and Seats—
Norris Brothers, Inc.

Drums (See Barrels)—

Dynamos—
Westinghouse Electric & Mfg. Co.

E

Electrical Equipment—
Fairbanks-Morse & Co.
Pyle National Co.
Wico Electric Co.

Electric Apparatus (See Apparatus—Electric)—

Electric Drilling Equipment—
Lucey Mfg. Corp.
Westinghouse Electric & Mfg. Co.

Electric Pumping and Pulling Motors (See Pumping and Pulling Motors—Electric)—

Electric Steel Castings—See Castings—Electric Steel)—

Elevators—Casing and Tubing—
Bovaird Supply Co.
Bridgeport Machine Co.
Dunn Mfg. Co.
Lucey Mfg. Corp.
Oil Well Supply Co.
Wilson Oil Tools Corp.

Elevators—Rod—
D & B Pump & Supply Co.
Dunn Mfg. Co.

Enamels—
Arco Company, The
Sherwin-Williams Co.

Engineers—Consulting and Contracting—
Hope Engineering & Supply Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
Power Specialty Co.
Westcott & Greis.
Widdell Engineering Co.

Engineers—Fire Protection—
Foamite-Childs Corp.
Engineers—Oil Buildings—
Austin Co.
International Derrick & Equipment Co.
Engineers—Oil Treating—
Barnickel, Wm. S., & Co.
Engines—Crude Oil—
Continental Supply Co.
Western Machinery Co.
Engines—Diesel —
Bessemer Gas Engine Co.
Busch-Sulzer Bros. Diesel Engine Co.
Foos Gas Engine Co.
McIntosh & Seymour Corp.
Western Machinery Co.
Worthington Pump & Machinery Corp.
Engines—Drilling—
Ajax Iron Works.
Beaver Manufacturing Co.
Bessemer Gas Engine Co.
Bovaird & Seyfang Mfg. Co.
Buda Co.
Buffalo Gasolene Motor Co.
Clark Bros. Co.
Climax Engineering Co.
Franklin Valveless Engine Co.
Hercules Motor Corp.
Lufkin Foundry & Machine Co.
Pattin Bros. Co.
Power Mfg. Co.
Republic Supply Co.
Titusville Iron Works Co.
Engines—Gas—
Beaver Manufacturing Co.
Bessemer Gas Engine Co.
Bruce-MacBeth Engine Co.
Buda Co.
Buffalo Gasolene Motor Co.
Chicago Pneumatic Tool Co.
Clark Bros. Co.
Climax Engineering Co.
Continental Supply Co.
Cooper, C. & G., Co.
Emsco Derrick & Equipment Co.
Foos Gas Engine Co.
Franklin Valveless Engine Co.
Frick-Reid Supply Co.
Hope Engineering & Supply Co.
Ingersoll-Rand Co.
International Supply Co.
Jones, S. M., Co.
Marion Mch., Fdy. & Supply Co.
Miller Improved Gas Engine Co.
National Supply Co.
National Transit Pump & Machine Co.
Oil Well Supply Co.
Pattin Bros. Co.
Reid, Joseph, Gas Engine Co.
Titusville Iron Works Co.
Waukesha Motor Co.
Western Machinery Co.
Engines—Gasoline—
Beaver Manufacturing Co.
Buda Co.
Buffalo Gasolene Motor Co.
Continental Motors Corp.
Fairbanks-Morse & Co.
International Harvester Co. of America.
Novo Engine Co.
Waukesha Motor Co.
Western Machinery Co.
Engines—Oil—
Bessemer Gas Engine Co.
De La Vergne Machine Co.
Fairbanks-Morse & Co.
Franklin Valveless Engine Co.
International Harvester Co. of America.
Ingersoll-Rand Co.
McIntosh & Seymour Corp.
National Supply Co.
Oil Well Supply Co.
Power Mfg. Co.
Reid, Joseph, Gas Engine Co.
Western Machinery Co.
Engines—Rotary—Steam—
Baker Motors, Inc.
Engines—Semi-Diesel, Oil—
Chicago Pneumatic Tool Co.
Engines—Steam—
Ajax Iron Works.
Baker Motors, Inc.
Frick-Reid Supply Co.
Lucey Mfg. Corp.
National Supply Co.
Oil Well Supply Co.
Evaporators—
Newton Process Mfg. Co.
Ross Heater & Mfg. Co., Inc.
Expansion Pistons (See Pistons)—
Extinguishers—Fire—
Amdyco Corp.
Foamite-Childs Corp.

F

Fabricators for Gasoline Plants and Refineries—
Stearns-Roger Mfg. Co.
Filters—Oil—
Burt Mfg. Co.
Fire Extinguishers (See Extinguishers)—
Fishing Tools (See Drilling and Fishing Tools)—
Fish Tail Bits (See Bits)—
Fittings—Dropped Forged Steel—
Vogt, Henry, Machine Co.
Fittings—Malleable & Cast Iron—
Bovaird Supply Co.
Crane Co.
Frick-Reid Supply Co.
Kelly & Jones Co.
Walworth Mfg. Co.
Fittings—Pipe—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.
Gaso Pump & Burner Mfg. Co.
Jarecki Mfg. Co.
Kellogg, M. W., Co.
Kennedy Valve Mfg. Co.
Lufkin Foundry & Machine Co.
Metric Metal Works.
Oil Well Supply Co.
Reading Steel Casting Co.
Republic Supply Co.
United Iron Works, Inc.
Fittings—Steel—
Dayton Pipe Coupling Co.
Kelly & Jones Co.
Kerotest Mfg. Co.
Ohio Steel Foundry Co.
Flanges—Brass, Iron and Steel—
Jefferson Union Co.
Kelly & Jones Co.
Metric Metal Works.
Flange Unions—
Gaso Pump & Burner Mfg. Co.
Flashlights—
National Carbon Co.
Floating Roofs and Decks—
Chicago Bridge & Iron Works.
Floodlights—
Pyle-National Co.
Floor Circle Braces (See Braces)
Force Feed Lubricators (See Lubricators)—
Forging Billets—
Andrews Steel Co.
Harrisburg Pipe & Pipe Bending Co.
Heppenstall Forge & Knife Co.
Forgings—
Champion Machine & Forging Co.
Milwaukee Forge & Machine Co.
Friction Clutch Pulleys (See Pulleys)—
Fuel Oil (See Oil—Fuel)—
Fuller's Earth—
Sinclair Refining Co.

G

Gas Compressors (See Compressors—Gas)—
Gas Engines (See Engines—Gas)
Gas Holders—
Chicago Bridge & Iron Works.
Gaskets—
Garlock Packing Co.
McCord Radiator & Mfg. Co.
Gaskets—Fibre—
Durabla Mfg. Co.
Gas Masks & Safety Appliances—
Mine Safety Appliance Co.
Gas Meters (See Meters)—
Gas Oil (See Oil—Gas)—
Gasoline—
Berry's James B. Sons Co.
Crown Central Petroleum Co.
Empire Refineries, Inc.
Gulf Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.
Sinclair Refining Co.
Skelly Oil Co.
Gasoline—Natural—
Chesnut & Smith Corp.
Warren Petroleum Co.
Gasoline Plant Equipment—
Bessemer Gas Engine Co.
Clark Brothers Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
Newton Process Mfg. Co.
Ross Heater & Mfg. Co., Inc.
Widdell Engineering Co.
Gas Regulator Casinghead—
Davis Regulator Co.
Gas Regulators—
Chaplin Fulton Mfg. Co.
Davis Regulator Co.
Fisher Governor Co.
Metric Metal Works.
Smith Separator Co.
Gas Scrubbers—
Newton Process Mfg. Co.
Gauge Glass—High Pressure—
Durabla Mfg. Co.
Gauge Poles—
Marsh Gauge Pole Co.
Gauges—Pressure and Vacuum—
Bristol Co.
Equitable Meter & Mfg. Co.
Metric Metal Works.
Gauges—Test—
Equitable Meter & Mfg. Co.
Metric Metal Works.
Gear Driven Pumps (See Pumps)
Gears—Cut—
Nuttall, R. D., & Co.
Gears—Reduction—
Emsco Derrick & Equipment Co.
Nuttall, R. D., & Co.
Gears—Reverse—
Emsco Derrick & Equipment Co.
Generators—
Westinghouse Electric & Mfg. Co.
Generators—Acetylene—
Oxweld Acetylene Co.
Generators—Steam—
Baker Motors, Inc.
Generators—Turbine—
Moon Manufacturing Co.
Pyle-National Co.
Westinghouse Electric & Mfg. Co.
Glass Bottles (See Bottles, Glass)
Glassware—Chemical for Laboratory Use—
Illinois Glass Co.
Governors—
Equitable Meter & Mfg. Co.
Gardner Governor Co.
Governors—Boiler Feed—
Chaplin-Fulton Mfg. Co.
Fisher Governor Co.
Grey Iron Castings (See Castings)

H

Hammers—Chipping and Calking Pneumatic—
Chicago-Pneumatic Tool Co.
Hammers—Riveting Pneumatic—
Chicago Pneumatic Tool Co.
Hangers—Iron and Steel—
Continental Supply Co.
Dodge Mfg. Corp.
Hatches—Gauge and Thief—
Oil Conservation Engineering Co.
Heat Exchangers—
Carbondale Machine Co.
Griscom-Russell Co.
Hope Engineering & Supply Co.
Newton Process Mfg. Co.
Ross Heater & Mfg. Co.
Southwestern Engineering Co., Inc.
Southwestern Engineering Corp.
Heat Interchangers—Fluid—
Braun, C. F., & Co.
Ross Heater & Mfg. Co., Inc.
High Pressure Gate Valves (See Valves)—
Hoists—Pneumatic, Geared and Universal—
Yale & Towne Mfg. Co.
Hoists—Portable—
Sullivan Machinery Co.
Wright Mfg. Co.
Yale & Towne Mfg. Co.
Hooks for Rods and Tubing—
Dunn Mfg. Co.
Hose—
Fenwick-Reddaway Mfg. Co.
Hose—Drillers—
Goodrich, B. F., Rubber Co.
United States Rubber Co.
Hose—Oil Suction and Discharge
Goodrich, B. F., Rubber Co.
United States Rubber Co.
Hose—Rubber—
Goodyear Tire & Rubber Co.
United States Rubber Co.
Hot Rolled Strip Steel (See Steel)
Hydraulic Gate Valves (See Valves)—
Hydraulic Jacks (See Jacks)—
Hypochlorite of Lime—
Mathieson Alkali Works, Inc.

I

Insulation Materials—
Celite Products Co.
Johns-Manville, Inc.
Insurance—Fire—
Oil Insurance Association.
Insurance—Tornado—
Oil Insurance Association.
Iron—Ingot—
American Rolling Mill Co.

J

Jacks—Hydraulic—
Bridgeport Machine Co.
Jacks—Lifting—
Templeton, Kenly & Co., Ltd.
Jacks—Pumping—
American Wells Works.
Bessemer Gas Engine Co.
Braden Co.
Frick-Reid Supply Co.
Jones, S. M., Co.
Kansas City Hay Press Co.
Norris, W. C.
Spang & Co.
Jars—
Arbon, Paul, & Co.
Bridgeport Machine Co.
Spang & Co.
Jar Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.

K

Kerosene—
Acme Petroleum Co.
Empire Refineries, Inc.
Gulf Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.
Skelly Oil Co.

L

Lacquers—
Arco Company, The
Sherwin-Williams Co.
Lanterns—Electric—
Delta Electic Co.
Lead and Mixed Metal Products—
Eagle-Picher Lead Co.
Lead in Oil—
Eagle-Picher Lead Co.
National Lead Co.
Lead Wool and Containers—
Eagle-Picher Lead Co.
Lifting Jacks (See Jacks)—
Lighting Equipment—
Pyle National Co.
Westinghouse Electric & Mfg. Co.
Liquid Level Controls (See controllers)—
Litharge—
Eagle-Picher Lead Co.
National Lead Co.
Loaders—Trucks—
Barber-Greene Co.
Long Distance Telephone—
American Telephone & Telegraph Co.
Lubricating Devices—
McCord Radiator & Mfg. Co.
Lubricating Oils (See Oils)—
Lubricators—
Ajax Iron Works.
Lunkenheimer Co.
Lubricators—Force Feed—
Manzel Brothers Co.
McCord Radiator & Mfg. Co.

M

Machine Tools—
Ryerson, Jos. T., & Sons, Inc.
Manifolds—
Reid, Joseph, Gas Engine Co.
Metal Buildings Sectional (All Types) (See Buildings)—
Meters—Gas—
Equitable Meter & Mfg. Co.
Foxboro Co., Inc.
Metric Metal Works.
Pittsburgh Meter Co.
Roots, P. H. & F. M., Co.
Westcott & Greis.
Meters—Gasoline—
Pittsburgh Meter Co.
Meters—Oil—
Pittsburgh Meter Co.
Molded Goods—Rubber—
Goodyear Tire & Rubber Co.
Motor Controlled Apparatus (See Apparatus—Motor Control)—
Motors—Electric—
Fairbanks-Morse & Co.
Westinghouse Electric & Mfg. Co.
Motors—Gasoline (See Engines—Gasoline)—
Motor Trucks (See Trucks—Motor)—

N

Naphtha—
Pure Oil Co.
Natural Gasoline (See Gasoline—Natural)—
Natural Gasoline Plant Equipment
American Tank Co.
Campbell, J. A.
Cooper, C. & G., Co.
Griscom-Russell Co.
Roots, P. H. & F. M., Co.
Ross Heater & Mfg. Co., Inc.
Smith Separator Co.
Westcott & Greis.
Nitrogen—
Linde Air Products Co.
Nozzles—Spray—
Power Plant Equip. Co.

O

Oil and Gas Pipe Line Construction—
Hope Engineering & Supply Co.
Oil Burners (See Burners—Oil)—
Oil Engines, Semi-Diesel (See Engines—Semi-Diesel Oil)—
Oil Field Equipment—
Baker Casing Shoe Co.
Bridgeport Machine Co.
Cunningham Co.
Gaso Pump & Burner Mfg. Co.
International Derrick & Equipment Co.
Iron King Mfg. Co.
Kaw Boiler Works Co.
National Supply Co.
Oil Well Supply Co.
Parkersburg Machine Co.
Parkersburg Rig & Reel Co.
Reed Roller Bit Co.
Regan Forge & Engineering Co.
Reid, Joseph, Gas Engine Co.
Republic Supply Co.
Simplex Equipment Co.
Trumble Gas Trap Co.
Oil Filters —(See Filters—Oil)—
Oil—Fuel—
Acme Petroleum Co.
Crown Central Petroleum Corp.
Empire Refineries, Inc.
Gulf Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.
Sinclair Refining Co.
Texas Company, The
Oil—Gas—
Acme Petroleum Co.
Crown Central Petroleum Corp.
Gulf Refining Co.
Pure Oil Co.
Sinclair Refining Co.
Texas Company, The
Oil—Lubricating—
Barnsdall Refining Co.
Berry's James B., Sons Co.
Crown Central Petroleum Corp.
Empire Refineries, Inc.
Gulf Refining Co.
Magnolia Petroleum Co.
Pennzoil Co.
Pure Oil Co.
Sinclair Refining Co.
Skelly Oil Co.
Texas Company, The
Oil—Tractor—
Barnsdall Refining Co.
Gulf Refining Co.
Pennzoil Co.
Pure Oil Co.
Skelly Oil Co.
Oiling Devices—
Lunkenheimer Co.
Oil Meters (See Meters)—
Oil Piping Equipment (See Fittings)—
Oil Reclaiming Process—
Barnickel, Wm. S., & Co.
Houston Pump & Supply Co.
Oil Refinery Equipment (See Refinery Equipment)—
Oil Securities (See Securities)—
Oil Suction and Discharge Hose—(See Hose)—
Oil Well Cementing—
Halliburton, Erle P.
Oil Well Screens (See Screens)—
Oil Wells Tools—
D & B Pump & Supply Co.
Hinderliter Tool Co.
Reed Roller Bit Co.
Titusville Forge Co.
U. S. Tool Co.
Over Shots—
Reed Roller Bit Co.
Regan Forge & Engineering Co.
Oxygen—
Linde Air Products Co.

P

Packer Release—
Acme Fishing Tool Co.
Packers—
Goodyear Tire & Rubber Co.
Guiberson Corp.
Larkin & Co.
Layne & Bowler Co.
Oil Well Supply Co.
Regan Forge & Engineering Co.
Spang & Co.
United States Rubber Co.
Packing—
Crane Packing Co.
Durabla Mfg. Co.
Garlock Packing Co.
Goodrich, B. F., Rubber Co.
Imperial Belting Co.
Johns-Manville, Inc.
Packing—Metallic—
Crane Packing Co.
Paint Guns—
Binks Spray Equipment Co.
Painting Equipment—Mechanical
Matthews, W. N., Corp.
Paints—
Aluminum Co. of America.
American Asphalt Paint Co.
Arco Company, The
Cook Paint & Varnish Co.
Dixon, Joseph Crucible Co.
Eagle-Picher Lead Co.
Eclipse Paint & Mfg. Co.
Sherwin-Williams Co.
St. Louis Surfacer & Paint Co.
Pipe—Cast Iron—
American Cast Iron Pipe Co.
Greenspon's, Jos., Sons Iron & Steel Co.
International Supply Co.
U. S. Cast Iron Pipe & Fdy. Co.
Pipe—Lead Chemical and Antimonial—
Eagle-Picher Lead Co.
Pipe—Steel—
Continental Supply Co.
Greenspon's, Jos., Sons Iron & Steel Co.
Jarecki Mfg. Co.
Kellogg, M. W., Co.
Murray Tool & Supply Co.
National Supply Co.
National Tube Co.
Republic Iron & Steel Co.
Ryerson, Jos. T., & Sons, Inc.
South Chester Tube Co.
Spang, Chalfant & Co., Inc.
Superior Tube Co.
Pipe—Wrought Iron—
Byers, A. M., Co.
Frick-Reid Supply Co.
Greenspon's, Jos., Sons Iron & Steel Co.
Oil Well Supply Co.
Reading Iron Co.
Superior Tube Co.
Pipe and Nipple Threading Machines—
Bignall & Keeler Machine Works.
Cox & Sons Co., The
Landis Machine Co.
Ryerson, Jos. T., & Sons, Inc.
Standard Engineering Co.
Pipe Clamps (See Clamps—Pipe)
Pipe Fittings (See Fittings)—
Pipe Grips—
Larkin & Co.
Pipe Headers—
National Tube Co.
Newton Process Mfg. Co.
Pipe Line Construction Tools—
National Transit Pump & Machine Co.
Pipe Line Ditchers (See Ditchers)
Pipe Line Equipment—
Gaso Pump & Burner Mfg. Co.
Pipe Screwing Machines—
Buckeye Traction Ditcher Co.
Pipe Suspension Device—
Stearns-Roger Mfg. Co.
Pipe Threading Dies (See Dies)—
Pipe Tools—
Armstrong Brothers Tool Co.
Nye Tool & Machine Works.
Piping—Fabricated—
Kelly & Jones Co.
Midwest Piping & Supply Co.
Piping—Hard Rubber—
United States Rubber Co.
Piping—Steel & Iron—
Crane Co.
Greenspon's, Jos., Sons Iron & Steel Co.
Power Piping Co.
Pistons—
Guiberson Corp.
Heppenstall Forge & Knife Co.
Pistons—Expansion—
Wilson Oil Tool Corp.
Pistons—Slush Pump—
Guiberson Corp.
Plain End Pipe Couplings (See Couplings—Plain End Pipe)—
Plugs—Bottom Water—
Guiberson Corp.
Polish Rods (See Rods—Polish)—
Portable Drilling Rigs (See Rigs)
Power Pumps (See Pumps)—
Power Units—Portable (See Engines)—
Pre-Heaters—
Newton Process Mfg. Co.
Ross Heater & Mfg. Co., Inc.
Preservatives—Asphalt—
American Asphalt Paint Co.
Pulleys—Wood, Iron and Steel—
Continental Supply Co.
Dodge Mfg. Co.
Pulling Machines—
Iron King Mfg. Co.
National Supply Co.
Safety Pulling Machine Co.
Pumpers—Long Stroke—
Farley Machine Co.
Pumping and Pulling Motors—Electric—
Westinghouse Electric & Mfg. Co.
Pumping Equipment—
American Well Works.
Axelson Machine Co.
Bryson Jackson Pump Mfg. Co., Inc.
D & B Pump & Supply Co.
Farley Machine Co.
Goulds Mfg. Co.
Jones, S. M., Co.
Myers, F. E., Bros. & Co.
Northrup Equipment Co.
Oil Well Supply Co.
Prescott Co.
Ratigan, J. P., Co.
Waukesha Motor Co.
Pumping Gear Units—
Nuttall, R. D., & Co.
Pumping Jacks (See Jacks)—
Pumping Powers—
Aldrich Pump Co.
Bessemer Gas Engine Co.
Buda Co.
Frick-Reid Supply Co.
Jones, S. M., Co.
Kansas City Hay Press Co.
Marion Mch., Fdy. & Supply Co.
National Supply Co.
Oil Well Supply Co.
Pattin Bros. Co.
Reid, Joseph, Gas Engine Co.
Spence Machine Co.
Titusville Iron Works Co.
Pumps—Boiler Feed—
Ajax Iron Works.
Byron Jackson Pump Mfg. Co., Inc.
Fairbanks-Morse & Co.
Gardner Governor Co.
Oil Well Supply Co.
Pumps—Centrifugal—
American Well Works.
Byron Jackson Pump Mfg. Co., Inc.
Dean Hill Pump Co.
Fairbanks-Morse & Co.
Worthington Pump & Machinery Corp.
Pumps—Direct Driven—
Aldrich Pump Co.
Bessemer Gas Engine Co.
Pumps—Electric—
Prescott Co.
Pumps—Fuel Oil Service—
Aldrich Pump Co.
Blackmer Pump Co.
Northern Fire Apparatus Co.
Pumps—Fuel Oil Transfer—
Aldrich Pump Co.
Blackmer Pump Co.
Byron Jackson Pump Mfg. Co., Inc.
Pumps—Gasoline and Oil for Filling Stations—
Gilbert & Barker Mfg. Co.
Pumps—Gear Driven—
Aldrich Pump Co.
Gaso Pump & Burner Mfg. Co.
Lucey Mfg. Corp.
Prescott Co.
Pumps—Hot Oil—
Blackmer Pump Co.
Byron Jackson Pump Mfg. Co., Inc.
Pumps—Pipe Line—
Aldrich Pump Co.

Byron Jackson Pump Mfg. Co., Inc.
Frick-Reid Supply Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
National Transit Pump & Machine.
Prescott Co.
Worthington Pump & Machinery Corp.

Pumps—Power—
Aldrich Pump Co.
Dean Brothers Co.
Fairbanks-Morse & Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
Myers, F. E., Bro. & Co.
National Transit Pump & Machine Co.
Novo Engine Co.
Prescott Co.
Waukesha Motor Co.

Pumps—Refinery—
Aldrich Pump Co.
Blackmer Pump Co.
Byron Jackson Pump Mfg. Co., Inc.
Dean Hill Pump Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
Kinney Mfg. Co.
National Transit Pump & Machine Co.
Northern Fire Apparatus Co.

Pumps—Rotary—
Blackmer Pump Co.
Northern Fire Apparatus Co.
Roots, P. H. & F. M., Co.

Pumps—Sand—
Bridgeport Machine Co.
Larkin & Co.

Pumps—Slush—
Gardner Governor Co.

Pumps—Steam—
Dean Brothers Co.
Fairbanks-Morse Co.
Frick-Reid Supply Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
Lucey Mfg. Corp.
National Transit Pump & Machine Co.
Oil Well Supply Co.
Prescott Co.

Pumps—Suction—
Gaso Pump & Burner Mfg. Co.

Pumps—Vacuum—
Bessemer Gas Engine Co.
Chicago Pneumatic Tool Co.
Clark Brothers Co.
Gaso Pump & Burner Mfg. Co.
Miller Improved Gas Engine Co.
Roots, P. H. & F. M., Co.
Ross Heater & Mfg. Co., Inc.

Pumps—Water—
Aldrich Pump Co.
American Well Works.
Byron Jackson Pump Mfg. Co., Inc.
Gaso Pump & Burner Mfg. Co.
Northern Fire Apparatus Co.
Prescott Co.

Purifiers—Oil Absorption—
Sharpless Specialty Co.

Pyrometers—
Brown Instrument Co.
Republic Flow Meters Co.

R

Ratchet Pipe Cutters—
Toledo Pipe Threading Machine Co.

Ratchet Pipe Threaders—
Nye Tool & Machine Works.
Toledo Pipe Threading Machine Co.

Ratchet Reamers—
Nye Tool & Machine Works.

Rathet Stocks and Dies—
Nye Tool & Machine Works.
Toledo Pipe Threading Machine Co.

Ratchet Wrenches (See Wrenches)

Receiving Boxes—
Reid, Joseph, Gas Engine Co.

Recorders—Differential Pressure—
Equitable Meter & Mfg. Co.
Metric Metal Works.

Refinery Equipment—
American Radiator Co.
Braun, C. F., & Co.
Carbondale Machine Co.
Chicago Bridge & Iron Works.
Graver Corp.
Griscom-Russell Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
Newton Process Mfg. Co.
Petroleum Appliance Co.
Petroleum Iron Works Co.
Power Piping Co.
Power Specialty Co.
Reid, Joseph, Gas Engine Co.
Ross Heater & Mfg. Co., Inc.
Ross-Meehan Foundries.
Smith, A. O., Corp.
Smith Separator Co.
Southwestern Engineering Co., Inc.
Southwestern Engineering Corp.
United Iron Works, Inc.
Universal Oil Products Co.
Vogt, Henry, Machine Co.
Walsh & Weidner Boiler Co.
Westcott & Greis.
Widdell Engineering Co.

Refinery Pumps (See Pumps)—

Refractories—Furnace, Stills and Baffles—
Bottfeld Refractories Co.

Refrigerating Machinery—
Carbondale Machine Co.
United Iron Works, Inc.
Vogt, Henry, Machine Co.

Regulators—
Fisher Governor Co., Inc.
Smith Separator Co.

Regulators—Gas—
Equitable Meter & Mfg. Co.

Rental Service—
Bridgeport Machine Co.

Reversible Clutches—
Bessemer Gas Engine Co.

Rig Irons—
International Supply Co.
Lucey Mfg. Corp.
National Supply Co.
Oil Well Supply Co.
Parkersburg Rig & Reel Co.

Rigs—Drilling, All Steel—
International Derrick & Equipment Co.
Moore, Lee C., & Co., Inc.

Rigs—Portable Drilling—
National Supply Co.
National Turnbuckle Derrick Co.
Star Drilling Machine Co.

River Clamps (See Clamps)—

Rods—Polish—
Jones, S. M., Co.

Rods—Pull—
Axelson Machine Co.
Columbus Sucker Rod Co.
Jones, S. M., Co.
Sheffield Steel Corp.

Rods—Sucker—
Axelson Machine Co.
Columbus Sucker Rod Co.
D & B Pump & Supply Co.
Frick-Reid Supply Co.
Jones, S. M., Co.
National Supply Co.
Oil Well Supply Co.
Republic Supply Co.
Sheffield Steel Corp.

Rods—Valve—
Jones, S. M., Co.

Roofing—Asbestos—
Johns-Manville, Inc.

Rope Socket Metal—
Eagle-Picher Lead Co.

Rope—Manila—
Ajax Rope Co., Inc.
Bovaird Supply Co.
Republic Supply Co.

Rope—Wire—
Ajax Rope Co., Inc.
American Cable Co.
Bovaird Supply Co.
Bridgeport Machine Co.
Broderick & Bascom Rope Co.
International Supply Co.
Jarecki Mfg. Co.
Leschen, A. & Sons, Rope Co.
Wickwire-Spencer Steel Corp.

Rotary Bit Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.

Rotary Disc Bits (See Bits)—

Rotary Drilling Equipment—
Emsco Derrick & Equipment Co.
Frick-Reid Supply Co.
International Derrick & Equipment Co.
Link-Belt Co.
Lucey Mfg. Corp.
Lufkin Foundry & Machine Co.
National Supply Co.
Oil Well Supply Co.
Republic Supply Co.
Titusville Iron Works Co.

Rotary Drive Bushings (See Bushings—Rotary Drive)—

Rotary Lines (See Rope—Wire)—

Rotary Post—
Reed Roller Bit Co.

Rotary Rock Bits (See Bits)—

Rotary Tool Joints—
Bartlesville Supply Co.
Hughes Tool Co.

Rotary Ventilators (See Ventilators)—

Rubber Belting (See Belting)—

Rubber Hose (See Hose)—

Run Down Tanks (See Tanks)—

Rust Preventatives—
Dearborn Chemical Co.
Eagle-Picher Lead Co.

S

Sand Lines—Manila —
Ajax Rope Co., Inc.

Sand Lines—Wire—
Ajax Rope Co., Inc.
Broderick & Bascom Rope Co.
Wickwire-Spencer Steel Corp.

Sand Pumps (See Pumps, Sand)—

Screens—Oil Well—
Layne & Bowler Co.

Screens—Water Well—
Layne & Bowler Co.

Screws Temper—
Burns Tool Co.

Seamless Steel Couplings—(See Couplings Seamless Steel)—

Separators—Centrifugal—
Miller, Max B., & Co.
Sharpless Specialty Co.

Separators—Gas and Oil—
American Tank Co.
Smith Separator Co.

Sheet Lead—Chemical and Antimonial—
Eagle-Picher Lead Co.

Sheets—Corrugated, Black and Galvanized—
American Sheet & Tin Plate Co.
Ryerson, Jos., T., & Son, Inc.
United Alloy Steel Corp.

Sheets—Steel—
American Sheet & Tin Plate Co.
Republic Iron & Steel Co.
Sheffield Steel Corp.
United Alloy Steel Corp.

Shingles—Asbestos—
Johns-Manville, Inc.

Sleeves—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.

Sleeves—Split—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.

Slush Pump Pistons (See Pistons)—

Slush Pumps—(See Pumps)—

Smoke Stacks—
Donovan Boiler Works.

Snuffers—Fire—
Simplex Equipment Co.

Sockets—
Acme Fishing Tool Co.
Bridgeport Machine Co.
Spang & Co.

Sockets—Swivel—
Arbon, Paul, & Co.

Sockets—Wire Rope—
Chicago Steel Foundry Co.

Soda, Ash—
Mathieson Alkali Works, Inc.

Soda—Caustic—
Mathieson Alkali Works, Inc.

Solders—Bar and Wire—
Eagle-Picher Lead Co.
Hoyt Metal Co.

Spark Plugs—
Mosler Metal Products Corp.

Spears—
Acme Fishing Tool Co.
Brown Welding & Machine Co.

Special Steel (See Steel Special)—

Split Sleeves (See Sleeves)—

Sprockets—Power Transmission—
Ajax Iron Works.
Chain Belt Co.

Stands—Vise—
Nye Tool & Machine Works.

Stationary Pipe Threading Die Heads (See Die Heads)—

Steel—All Kinds—
Ryerson, Jos., T., & Son, Inc.

Steel—Alloy—
Central Steel Co.
Timken Roller Bearing Co.
United Alloy Steel Corp.

Steel—Bit—
Central Steel Co.

Steel—Hot Rolled Strip—
Central Steel Co.

Steel—Special—
Central Steel Co.
United Alloy Steel Corp.

Steel Band Wheels (See Band Wheels—Steel)—

Steel Bridges—(See Bridges)—

Steel Bull Wheels (See Bull Wheels—Steel)—

Steel Castings (See Castings)—

Steel Couplings for Casing, Line Pipe, Drill Pipe and Tubing (See Couplings)—

Steel Crown Blocks (See Crown Blocks)—

Steel Derricks (See Derricks)—

Steel Fabricators—Structural—
Austin Co.
Braden Co.
Graver Corp.
International Derrick & Equipment Co.

Steel Fittings (See Fittings)—

Steel Pitmans—
International Derrick & Equipment Co.
Moore, Lee C., & Co., Inc.
Slater Brothers Turnbuckle Derrick Co.

Steel Plate Construction—
Chicago Bridge & Iron Works
Graver Corp.
Kaw Boiler Works Co.
Petroleum Iron Works Co.
Vogt, Henry, Machine Co.

Steel Sheets (See Sheets, Steel)—

Steel Valves (See Valves—Steel)—

Steel Walking Beams (See Walking Beams—Steel)—

Steel Wheels and Tug Rims—
International Derrick & Equipment Co.

Stills—
Chicago Bridge & Iron Works.
Graver Corp.
Kaw Boiler Works Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
Newton Process Mfg. Co.
Petroleum Iron Works Co.
Smith, A. O., Corp.
Vogt, Henry, Machine Co.
Widdell Engineering Co.

Stocks & Dies—
Borden Co.
Nye Tool & Machine Works.
Toledo Pipe Threading Machine Co.

Structural Steel Fabricators (See Steel Fabricators)—

Stuffing Boxes—
Axelson Machine Co.
Kansas City Hay Press Co.

Sucker Rods (See Rods—Sucker)

Suction Pumps (See Pumps)—

Sulphuric Acid—
Eagle-Picher Lead Co.

Superheaters—Steam—
Power Plant Equip. Co.

Swabs—
Arbon, Paul, & Co.
Guiberson Corp.
Hoffman Mfg. Co.
Saunders Bros.
Simplex Equipment Co.

Swedge Nipples—
Dresser, S. R., Mfg. Co.
Harrisburg Pipe & Pipe Bending Co.

Swivels—
Layne & Bowler Co.
Lucey Mfg. Corp.
Titusville Iron Works Co.

T

Tank Cars (See Cars—Tank)—

Tank Cars Leased (See Cars)—

Tank Equipment—
Oil Conservation Engineering Co.

Tanks—Bolted—
American Tank Co.
Butler Mfg. Co.
Maloney Tank Mfg. Co.
Parkersburg Rig & Reel Co.

Tanks—Bulk Station—
Butler Mfg. Co.
Graver Corp.

Tanks—Cylindrical—
Petroleum Iron Works Co.

Tanks—Elevated Steel—
Chicago Bridge & Iron Works.

Tanks—Field Storage—
American Car & Foundry Co.
American Tank Co.
Donovan Boiler Works.
Graver Corp.
Kaw Boiler Works.
Kewanee Boiler Co.
Maloney Tank Mfg. Co.
Petroleum Iron Works Co.
Pittsburgh-Des Moines Steel Co.
Riter-Conley Co.
United Iron Works, Inc.

Tanks—Horizontal Storage—
Graver Corp.
Kaw Boiler Works Co.
Maloney Tank Mfg. Co.

Tanks—Run Down—
Donovan Boiler Works.
Graver Corp.
Kaw Boiler Works Co.
Newton Process Mfg. Co.

Tanks—Truck—
American Tank Co.
Butler Mfg. Co.
White Co.

Tanks—Underground—
Butler Mfg. Co.
Gilbert & Barker Mfg. Co.
Graver Corp.
Kewanee Boiler Co.
Pittsburgh-Des Moines Steel Co.

Tanks—Welded—
American Tank Co.
Chicago Bridge & Iron Works.

Taper Taps—
Hughes Tool Co.

Tapes—Measuring for Oil Gauging—
Lufkin Rule Co.

Temperature Controllers (See Controllers—Temperature)—

Temper Screws (See Screws)—

Thermometers—Indicating and Recording—
American Schaeffer & Budenberg Corp.
Bristol Co.
Taylor Instrument Co.

Threading Machines—
Bignall & Keeler Machine Wks.
Cox & Sons Co., The
Landis Machine Co.

Thread Protectors—
Spang & Co.

Tires—Automobile—
Continental Supply Co.

Tongs—
Bridgeport Machine Co.
Wilson Oil Tools Corp.

Tongs—Back Up—
Williams, J. H., & Co.

Tongs—Break Out—
Reed Roller Bit Co.
Williams, J. H., & Co.

Tongs—Casing—
Dunn Mfg. Co.
Guiberson Corp.

Tongs—Chain Pipe—
Armstrong Bros. Tool Co.
Williams, J. H., & Co.

Tongs—Pipe—
National Transit Pump & Machine Co.

Tongs—Rotary—
Dunn Mfg. Co.

Tongs—Tool Joint—
Guiberson Corp.
Hughes Tool Co.
Reed Roller Bit Co.

Tongs—Tubing—
Dunn Mfg. Co.

Tool Chests—Pipe—
Nye Tool & Machine Works.

Tool Joints—
Bridgeport Machine Co.
Federal Supply Co.
Hughes Tool Co.
Lucey Mfg. Corp.
Oil Well Supply Co.
Regan Forge & Engineering Co.

Tool Joint Tongs (See Tongs)

Tools—Fishing and Drilling (See Drilling and Fishing Tools)—

Torches—
Oxweld Acetylene Co.

Tractor Oil (See Oil—Tractor)—

Tractors—
International Harvestor Co. of America.
Rock Island Plow Co.

Transmission Belt—Rubber—
Goodrich, B. F. Rubber Co.
United States Rubber Co.

Transmission Lining—
Stanley Belting Corp.

Traveling Block—
Lucey Mfg. Corp.
Regan Forge & Engineering Co.
Wright Mfg. Co.

Trenchers—Vertical Boom—
Barber-Greene Co.

Trucks—Motor—
Ford Motor Co.
General Motors Truck Co.
International Harvester Co. of America.
White Co.

Truck Tanks (See Tanks)—

Truck Tires (See Tires—Truck)—

Tubes—Boiler, Charcoal Iron—
Byers, A. M., Co.
Reading Iron Co.

Tubes—Boiler Steel—
Continental Supply Co.
National Tube Co.
Ryerson, Jos. T., & Son, Inc.

Tubing—
Babcock & Wilcox Tube Co.
Byers, A. M., Co.
Central Tube Co.
Continental Supply Co.
National Tube Co.
Reading Iron Co.
South Chester Tube Co.
Spang, Chalfant & Co., Inc.
Superior Tube Co.

Tubing Catchers—
Continental Supply Co.
Dunn Mfg. Co.
Guiberson Corp.

Tubing Elevators (See Eelevators, Casing and Tubing)—

Tubular Goods—
Oil Well Supply Co.
Republic Iron & Steel Co.
Spang, Chalfant & Co., Inc.

Tubular Goods—Wrought Iron—
Byers, A. M., Co.
Reading Iron Co.

Turbines for Lighting Equipment
Lucey Mfg. Corp.
Westinghouse Electric & Mfg. Co.

Turbine Generators (See Generators—Turbine)—

Turnbuckle Derricks (See Derricks)—

U

Underground Tanks (See Tanks)

Underreamer Bit Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.

Underreamer Cutter Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.

Underreamers—
Bridgeport Machine Co.
Brown Welding & Machine Co.
Guiberson Corp.
Wilson Oil Tools Corp.

Unions—
Jefferson Union Co.
Kelly & Jones Co.

V

Vacuum Pumps (See Pumps)—

Valuations—
American Appraisal Co.

Valves—Blow-off—
Homestead Valve Mfg. Co.

Valves—Brass and Bronze—
Homestead Valve Mfg. Co.
Kelly & Jones Co.
Lunkenheimer Co.
Reading Steel Casting Co.
Walworth Mfg. Co.

Valves—Cast Steel—
Chapman Valve Mfg. Co.
Homestead Valve Mfg. Co.

Valves—Check—
Gaso Pump & Burner Mfg. Co.
Lunkenheimer Co.

Valves—Drop Forged Steel—
Edward Valve & Mfg. Co.
Vogt, Henry, Machine Co.

Valves—Gate—High and Low Pressure—
Chapman Valve Mfg. Co.
Crane Co.
Darling Valve & Mfg. Co.
Kelly & Jones Co.
Kennedy Valve Mfg. Co.
Kerotest Mfg. Co.
Ludlow Valve Mfg. Co.
Lunkenheimer Co.
Murray Tool & Supply Co.
Powell, Wm., Co.

Valves—Iron—
Chapman Valve Mfg. Co.
Lunkenheimer Co.
Reading Steel Casting Co.

Valves—Metal Pump—
Durabla Mfg. Co.

Valves—Pump—
United States Rubber Co.

Valves—Relief—Supersensitive—
Davis Regulator Co.

Valves—Steel—
Chapman Valve Mfg. Co.
Edward Valve Mfg. Co.
Kelly & Jones Co.
Kerotest Mfg. Co.
Lunkenheimer Co.
Metric Metal Works.
Powell, Wm., Co.
Reading Steel Casting Co.

Valves—Tank Vent—
Oil Conservation Engineering Co.

Valves—Working Barrel—
Atlas Ball Co.
Axelson Machine Co.
D & B Pump & Supply Co.
Hough, Charles N., Mfg. Co.
Northup Equipment Co.
Oil Well Supply Co.

Varnishes—
Arco Company, The.
Sherwin-Williams Co.

Ventilators—Rotary—
Swartwout Co.

Vises—Bench—
Nye Tool & Machine Works.

Vises—Pipe—
Nye Tool & Machine Works.

Vises—Post—
Nye Tool & Machine Works.

W

Wagons—Truss Wheel—
Athey Truss Wheel Co.

Walking Beams—Steel—
Emsco Derrick & Equip. Co.
Moore, Lee C., & Co., Inc.

Water Cooling Systems—
Power Plant Equip. Co.

Water Gauge Cocks (See Cocks)—

Water Pumps (See Pumps)—

Water Softeners and Filters—
Butler Mfg. Co.
Graver Corp.

Water Well Screens (See Screens)

Wax—
Barnsdall Refining Co.
Gulf Refining Co.
Pure Oil Co.

Weight Indicators—
Hughes Tool Co.

Welded Tanks (See Tanks)—

Welding Accessories—Electric—
Wilson Welder & Metals Co.

Welding and Cutting Apparatus—
Oxweld Acetylene Co.

Welding Machines—Electric—
Wilson Welder & Metals Co.

Welding Supplies—
Oxweld Acetylene Co.

Welding Wire—
Frick-Reid Supply Co.
Oxweld Acetylene Co.
Wilson Welder & Metals Co.

Well Drilling and Fishing Tools—(See Drilling and Fishing Tools)—

Well Drilling Equipment (See Drilling Equipment)—

Well Shooting—
Eastern Torpedo Co.
Zero Hour Torpedo Co.

Wheels—Pipe Cutter—
Nye Tool & Machine Works.

Wheel—Steel Automotive—
Budd Wheel Co.

Winches—
Braden Co.
Oil Conservation Engineering Co.

Wire Lines (See Cables—Steel)—

Wire Rope (See Rope—Wire—

Wood Patterns and Models—
Gaso Pump & Burner Mfg. Co.

Working Barrels—
Axelson Machine Co.
D & B Pump & Supply Co.
Franklin Valveless Engine Co.
Frick-Reid Supply Co.
Hough, Charles N., Mfg. Co.
McGregor Working Barrel Co.
Norris, W. C.
Northrup Equipment Co.
Oil Well Supply Co.

Working Barrel Valves (See Valves—Working Barrel)—

Wrenches—Closet Spuds—
Nye Tool & Machine Works.

Wrenches—Drop Forged—
Williams, J. H., & Co.

Wrenches—Pipe—
Trimont Mfg. Co.
Walworth Mfg. Co.

Wrenches—Ratchet—
Dresser, S. R., Mfg. Co.
Nye Tool & Machine Works.

Z

Zinc Oxide—
Eagle-Picher Lead Co.

Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS

Pipe Line Statement for February Runs

*Prairie Pipe Line Co.	3,360,000	120,000
Gulf Pipe Line Co.	863,763	30,848
Texas Pipe Line Co.	478,324	17,083
Magnolia Pet. Co.	1,035,521	36,983
Cosden Pipe Line Co.	810,019	28,928
Empire Pipe Line Co.	644,510	23,018
*Sinclair ipe Line Co.	1,417,220	50,615
*Other lines	6,636,000	237,000
Total February	15,245,347	544,475
Total January	16,910,854	546,507
Difference	1,665,507	1,032

Shipments

†Prairie Pipe Line Co.	4,071,405	145,407
Gulf Pipe Line Co.	1,015,592	36,271
Texas Pipe Line Co.	506,744	18,098
Magnolia Pet. Co.	1,350,262	48,223
Cosden Pipe Line Co.	636,563	22,948
Empire Pipe Line Co.	720,206	25,722
†Sinclair Pipe Line Co.	2,102,156	75,077
*Other lines	7,140,000	255,000
Total February	17,542,918	626,532
Total January	19,168,415	618,333
Difference	1,625,497	8,199

Stocks

*Prairie Oil & Gas Co.	27,580,000
Prairie Pipe Line Co.	2,000,000
Gulf Pipe Line and Gypsy Oil Co.	6,453,161
The Texas Company	4,323,345
Magnolia Petroleum Co.	5,455,717
Cosden Pipe Line Co.	1,771,451
Empire Pipe Line Co.	2,890,445
Sinclair Crude Oil Purchasing Co.	21,550,000
Carter Oil Co.	15,018,257
*Other lines	9,900,000
Total February	96,942,376
Total January	98,258,772
Difference	1,316,396

*Estimated.

†Prairie shipments also include Texas crude oil and Sinclair shipments include also Wyoming and Texas crude oil.

Note—Stocks do not include approximately 6,900,000 bbls. held in storage on private tank farms and leases.

EASTERN PIPE LINES

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for January and February:

	Jan. '26	Feb. '26
Nat. Transit	143,083.02	140,437.20
S. W. Pa. P. L.	77,636.84	82,218.00
Eureka P. L.	328,099.81	328,769.96
Buckeye P. L. (Macksburg)	279,450.58	275,240.87
Buckeye P. L. (Cleveland)	11,364.93	10,297.41
Buckeye P. L. (Lima, etc.)	117,302.17	117,052.32
Indiana P. L.	8,872.26	9,530.57
Cumberland P. L.	264,029.33	257,256.68
N. Y. Transit	18,738.53	17,815.08
Tidewater P. L.	145,119.51	136,839.08
Pure Oil	168,182.43	158,793.42
Emery P. L.	48,775.87	43,886.56
Indian Ref.	80,966.82	80,656.88
Paragon Dev.	26,760.22	25,650.67
Pittsburgh P. L.	6,141.78	6,649.29
Total	1,724,524.19	1,691,032.96
Daily average	55,629.81	60,394.03

Note—Indian Refining Co. also reported other receipts of 280,008.91 bbls. Paragon Refining Co. had other receipts of 136,185.12 bbls. Paragon Development had other receipts of 1,750.32 bbls. Pure Oil had other receipts of 58,277.57 bbls.

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for January and February:

	Jan. '26	Feb. '26
Nat. Transit	288,806.28	300,294.95
S. W. Pa. P. L.	366,562.67	320,351.13
Eureka P. L.	164,947.50	148,099.79
Buckeye P. L. (Macksburg)	117,122.01	122,324.18
Buckeye P. L. (Cleveland)	1,122.83	969.77
Buckeye P. L. (Lima, etc.)	786,501.04	705,531.60
Indiana P. L.	1,163,995.13	1,099,401.49
Cumberland P. L.	162,185.71	150,113.41
N. Y. Transit	708,005.50	526,231.48
Northern P. L.	136,305.06	122,498.92
Tidewater P. L.	107,972.02	143,555.36
Pure Oil	224,858.49	211,673.48
Emery P. L.	41,988.55	44,896.24
Paragon Ref.	161,272.07	118,033.56
Indian Ref.	428,138.88	421,529.21
Paragon Dev.	31,314.40	22,864.81
Pittsburgh P. L.	7,640.10	6,292.15
Total	4,837,741.24	4,465,661.53
Daily average	156,056.29	159,487.91

Gross Stocks

The gross stocks held by various pipe lines in the oil producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky at the close of January and February, were as follows:

	Jan. '26	Feb. '26
Nat. Transit	1,010,068.01	1,010,062.31
S. W. Pa. P. L.	705,514.46	668,593.49
Eureka P. L.	1,503,389.89	1,514,235.47
Buckeye P. L. (Macksburg)	335,515.41	372,524.75
Buckeye P. L. (Cleveland)	72,522.50	66,885.32
Buckeye P. L. (Lima, etc.)	2,773,898.18	2,402,586.47
Indiana P. L.	536,488.64	550,608.52
Cumberland P. L.	607,313.30	583,281.41
Southern P. L.	497,782.56	532,095.25
N. Y. Transit	659,952.29	721,540.07
Northern P. L.	449,408.69	481,120.13
Pure Oil	400,945.59	405,108.77
Emery P. L.	30,751.95	29,360.37
Paragon Ref.	48,043.54	71,433.17
Indian Ref.	218,689.98	159,991.34
Paragon Rev.	4,800.92	5,465.24
Pittsburgh P. L.	4,084.15	4,502.80
Total	9,859,170.36	9,579,394.88
Increase	599,275.00	279,775.48

Grades of Oil

The following table shows the amount of the different grades of oil held by the eastern pipe lines at the close of January and February showing the gross stocks of the above fields:

	Jan. '26	Feb. '26
Penna	3,862,226.25	3,895,733.10
Lima	1,025,702.95	1,022,956.97
Kentucky	1,197,665.71	1,181,936.95
Mid-Continent	3,717,998.58	3,396,996.28
Illinois	55,576.87	81,771.58
Total	9,859,170.36	9,579,394.88

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1923	1924	1925	1926
January	75,790	62,638	56,831	55,630
February	71,092	68,023	60,606	60,394
March	76,592	68,721	60,576	.....
April	75,614	71,058	63,062	.....
May	77,365	63,942	59,217	.....
June	77,593	63,230	61,270	.....
July	71,879	64,206	62,638	.....
August	76,910	59,942	59,686	.....
September	72,358	62,930	62,510	.....
October	76,256	64,976	60,995	.....
November	70,762	56,282	59,350	.....
December	69,271	55,814	57,974	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1923	1924	1925	1926
January	171,067	145,518	167,889	156,056
February	164,219	148,732	160,863	159,488
March	185,487	147,098	154,591	.....
April	170,751	147,611	151,429	.....
May	177,102	134,997	146,995	.....
June	173,598	143,010	149,467	.....
July	168,330	124,187	161,338	.....
August	142,776	123,120	161,730	.....
September	137,266	127,325	156,719	.....
October	134,597	123,170	145,388	.....
November	131,426	124,400	143,582	.....
December	139,909	151,392	150,162	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines, at the close of each month for the past three years:

	1924	1925	1926
January	12,907,202	11,353,276	9,859,170
February	11,844,068	11,192,924	9,579,394
March	10,906,762	11,158,297	.....
April	10,922,742	11,062,082	.....
May	11,335,309	11,207,562	.....
June	11,544,204	11,093,796	.....
July	12,062,361	11,067,453	.....
August	12,221,676	10,974,481	.....
September	12,206,836	10,781,753	.....
October	12,664,061	11,086,850	.....
November	12,268,530	11,068,158	.....
December	11,583,680	10,458,445	.....

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and averages reported above:

1925—	Receipts	Shipmts.	Stocks
February	2,702.05	4,564.70	11,075.83
March	3,177.21	2,364.30	11,898.74
April	3,040.41	1,780.11	13,159.04
May	2,814.99	5,719.90	10,254.13
June	3,052.75	1,221.83	12,085.05
July	2,639.34	3,174.10	11,550.29
August	3,216.97	1,577.99	13,189.27
September	2,929.99	5,352.05	10,767.31
October	2,869.75	1,499.34	12,137.62
November	2,759.66	2,571.32	12,283.40
December	2,661.87	3,441.67	11,503.60
1926—			
January	2,990.16	1,478.35	13,015.41
February	2,580.23	2,776.19	12,819.45

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks March 1	2,525,834.95
Runs from wells	605,763.55
Other receipts	497,242.71
Regular deliveries	465,591.42
Other deliveries	461,229.17

The amount of Illinois oil run by the Tidewater Pipe Co. in February was 26,848.44 bbls. and deliveries were 40,719.09 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

1925—		
March	754,335.68	611,348.49
April	622,865.14	637,242.85
May	692,671.94	568,573.62
June	700,090.46	589,535.24
July	724,481.26	564,713.19
August	673,652.38	650,649.97
September	706,434.87	516,697.61
October	706,532.00	623,682.32
November	664,556.30	488,449.19
December	665,086.99	578,938.47
1926—		
January	665,243.62	516,083.76
February	632,611.99	506,310.51

The Tidewater Pipe Co., Ltd., also delivered in February 115,542.91 bbls. of Oklahoma oil. The total deliveries of all grades by the Tidewater were 299,817.36 bbls.

AVERAGE DAILY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF PORTS

Average bbls. per day—	Atlantic Ports: Baltimore	Boston	New York	Philadelphia	Others	Total	Gulf Coast Ports: Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total All Ports
November	7,032	9,419	14,258	12,903	9,161	52,773	.....	.....	5,032	806	5,838	58,611
December	6,226	12,129	28,452	20,193	9,677	76,677	.....	4,339	4,871	.....	9,710	86,387
January	9,325	13,484	32,581	19,387	5,097	79,804	.....	.....	.....	65	65	79,869
February	13,111	9,464	28,214	24,393	20,107	95,289	.....	.....	.....			95,289

AVERAGE DAILY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Average bbls. per day—	Atlantic Ports: Baltimore	Boston	New York	Philadelphia	Others	Total	Gulf Coast Ports: Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total All Ports
November	18,935	4,193	45,774	9,806	33,419	112,127	12,613	26,484	7,516	6,000	52,613	164,740
December	12,806	20,548	35,613	15,064	30,613	114,644	13,129	25,387	6,935	5,516	50,967	165,611
January	12,451	19,484	49,451	13,646	21,903	115,934	21,903	25,871	5,645	4,871	58,290	174,224
February	14,643	16,971	60,107	9,464	20,750	121,035	22,321	50,250	6,286	6,714	85,571	206,606

GROSS PRODUCTION OF THE UNITED STATES FOR 12 MONTHS

(IN BARRELS)

		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mountains	Eastern Fields	Total
March:	Month	18,626,019	14,403,716	13,062,907	2,824,534	3,564,473	1,807,559	2,734,235	3,202,000	60,225,443
	Daily average	600,839	464,636	421,384	91,114	114,983	58,308	88,201	103,290	1,942,756
April:	Month	17,959,053	14,055,450	12,696,365	2,971,110	7,560,230	1,767,077	2,744,691	3,084,000	62,837,576
	Daily average	598,655	468,515	423,179	99,037	252,008	58,903	91,490	102,800	2,094,586
May:	Month	18,820,328	14,443,675	13,077,697	3,493,266	11,813,996	1,886,752	2,799,542	3,167,300	69,502,556
	Daily average	607,107	465,925	421,861	112,686	381,097	60,863	90,308	102,171	2,242,018
June:	Month	19,288,135	13,832,970	12,602,540	3,229,440	9,200,372	1,830,965	2,754,498	3,389,000	66,127,920
	Daily average	642,938	461,099	420,085	107,648	306,672	61,032	91,816	109,000	2,204,264
July:	Month	20,411,049	14,263,565	12,337,598	3,686,675	7,835,819	1,898,178	3,129,199	3,348,000	66,910,083
	Daily average	658,421	460,115	397,984	118,925	252,768	61,231	100,942	108,000	2,158,390
August:	Month	21,005,580	14,441,040	11,936,079	3,668,087	7,450,580	1,858,543	3,250,448	3,177,000	66,677,357
	Daily average	677,598	465,480	385,032	114,777	240,341	56,727	104,853	102,484	2,150,883
September:	Month	20,062,763	14,825,040	11,264,890	3,393,270	6,457,950	1,776,570	3,235,625	3,212,000	64,228,108
	Daily average	668,759	494,168	375,496	113,109	215,265	59,219	107,854	107,067	2,140,937
October:	Month	20,015,076	14,921,199	11,196,511	3,477,146	6,409,281	1,871,830	3,394,990	3,248,000	64,534,033
	Daily average	645,648	481,329	361,178	112,166	206,751	60,382	109,500	104,774	2,081,743
November:	Month	19,095,907	14,590,980	10,650,087	3,221,760	5,927,955	1,758,882	3,088,121	2,992,000	61,325,692
	Daily average	636,530	486,366	355,003	107,397	197,599	58,629	102,937	99,753	2,044,190
December:	Month	19,249,711	14,123,848	10,930,455	3,308,816	6,047,883	1,763,966	3,187,164	3,086,900	61,698,743
	Daily average	620,959	455,608	352,595	106,736	195,093	56,902	102,812	99,552	1,990,282
January:	Month	19,069,563	13,674,813	10,880,814	3,250,536	5,489,620	1,606,952	3,136,280	3,014,000	60,122,578
	Daily average	615,147	441,123	350,994	104,856	177,084	51,835	104,396	97,226	1,939,438
February:	Month	17,163,963	12,387,620	9,689,120	2,877,812	4,756,836	1,583,904	2,769,605	2,719,100	53,947,960
	Daily average	612,999	442,415	346,040	102,779	169,887	56,568	98,914	97,111	1,926,713
	Total 12 months	230,767,747	169,963,916	140,324,063	39,292,452	82,514,995	21,411,178	36,224,398	37,639,300	758,138,049
	Daily average	632,240	465,655	384,449	107,651	226,068	58,661	99,245	103,121	2,077,091

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